

Public Employees Retirement Association of Minnesota

General Employees Retirement Plan

GASB Statements No. 67 and No. 68 Accounting and
Financial Reporting for Pensions

June 30, 2020





November 13, 2020

Public Employees Retirement Association of Minnesota
General Employees Retirement Plan
St. Paul, Minnesota

Dear Trustees of the General Employees Retirement Plan:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 for the General Employees Retirement Plan ("GERP"), as amended by Statement No. 82. These calculations have been made on a basis that is consistent with our understanding of these accounting standards.

GASB Statement No. 67 is the accounting standard that applies to the financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust. GASB Statement No. 82 is an amendment to Statements No. 67, No. 68, and No. 73, intended to improve consistency in the application of the accounting standards.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statements No. 67 and No. 68. The Net Pension Liability is not an appropriate measure for measuring the sufficiency of plan assets to cover the estimated cost of settling the employer's benefit obligations. The Net Pension Liability is not an appropriate measure for assessing the need for or amount of future employer contributions. The calculation of the plan's liability for this report may not be applicable for purposes of funding the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statement No. 67 and No. 68 may produce significantly different results. The information in this report is calculated on a total plan basis. PERA is responsible for preparing the Schedule of Employer Allocations and the Schedule of Pension Amounts by Employer. This report may be provided to parties other than the Public Employees Retirement Association (PERA) only in its entirety and only with the permission of PERA. GRS is not responsible for unauthorized use of this report.

This report is based upon information, furnished to us by PERA, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. If your understanding of this information is different, please let us know. This information was checked for internal consistency, but it was not audited.

This report complements the actuarial valuation report for funding purposes that was or will be provided to the Plan and should be considered in conjunction with that report. Please see the actuarial valuation report as of June 30, 2020 for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

This report does not fully reflect the recent and still developing impact of COVID-19, which is likely to influence demographic and investment experience, at least in the short term. We will continue to monitor these developments and their impact on the plan.

This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

To the best of our knowledge, the information contained within this report is accurate and fairly represents the actuarial position of the General Employees Retirement Plan as of the measurement date. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

The signing actuaries are independent of the plan sponsor.

Brian B. Murphy and Bonita J. Wurst are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,



Brian B. Murphy, FSA, EA, FCA, MAAA, PhD



Bonita J. Wurst, ASA, EA, FCA, MAAA



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SECTION A

EXECUTIVE SUMMARY

Executive Summary as of June 30, 2020 (Dollars in Thousands)

	2020
Actuarial Valuation Date	June 30, 2020
Measurement Date of the Net Pension Liability	June 30, 2020
Employer's Fiscal Year Ending Date (Reporting Date)	Varies by Employer

Membership

Number of	
- Service Retirements	95,830
- Survivors	8,981
- Disability Retirements	3,681
- Deferred Retirements	64,672
- Terminated other non-vested	79,069
- Active Members	153,741
- Total	405,974
Covered Payroll	\$ 6,698,754

Net Pension Liability

Total Pension Liability	\$ 28,626,916
Plan Fiduciary Net Position	\$ 22,631,459
Net Pension Liability	\$ 5,995,457
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	79.06%
Net Pension Liability as a Percentage of Covered Payroll	89.50%

Development of the Single Discount Rate

Single Discount Rate	7.50%
Long-Term Expected Rate of Investment Return	7.50%
Long-Term Municipal Bond Rate*	2.45%
Last year ending June 30 in the 2021 to 2120 projection period for which projected benefit payments are fully-funded	2120

Total Pension Expense/(Income) \$ 237,470

Deferred Outflows and Inflows by Source Arising from Current and Prior Periods to be Recognized in Future

Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	\$ 54,662	\$ 22,684
Changes in assumptions	\$ -	\$ 222,274
Net difference between projected and actual earnings on pension plan investments	\$ 606,138	\$ 502,560
Total	\$ 660,800	\$ 747,518

* Source: Based on the 20-Year Municipal GO Index of mixed maturity general obligation municipal bonds as of the weekly rate closest to but not later than the Measurement Date.



Discussion

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67 establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68 establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements. Governmental Accounting Standards Board (GASB) Statement No. 82, Pension Issues, is an amendment to Statements No. 67, No. 68, and No. 73, intended to improve consistency in the application of the accounting standards.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state or local governments to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Paragraph 57 of GASB Statement No. 68 states, "Contributions to the pension plan from the employer subsequent to the measurement date of the collective net pension liability and before the end of the employer's reporting period should be reported as a deferred outflow of resources related to pensions." The information contained in this report does not incorporate any contributions made to GERP subsequent to the measurement date of June 30, 2020.

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the liability and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position in accordance with GASB Statement No. 67. The *statement of fiduciary net position* presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The *statement of changes in fiduciary net position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Notes to Financial Statements

GASB Statement No. 68 requires the notes of the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

Both GASB Statement No. 67 and No. 68 require the notes of the financial statements for the employers and pension plans, to include certain additional information. The list of disclosure items should include:

- A description of benefits provided by the plan;
- The type of employees and number of members covered by the pension plan;
- A description of the plan's funding policy, which includes member and employer contribution requirements;
- The pension plan's investment policies;
- The pension plan's fiduciary net position, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- The net pension liability using a discount rate that is 1% higher and 1% lower than used to calculate the total pension liability and net pension liability for financial reporting purposes;
- Significant assumptions and methods used to calculate the total pension liability;
- Inputs to the discount rates; and
- Certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with Statement No. 67. This information includes:

- The composition of the pension plan's Board and the authority under which benefit terms may be amended;
- A description of how fair value is determined;
- Information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets; and
- Annual money-weighted rate of return.

Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- Sources of changes in the net pension liability;
- Information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- Comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. For employer reporting, the net pension liability and pension expense should be measured as of a date (measurement date) no earlier than the end of the employer's prior fiscal year, consistently applied from period to period. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2020 and a measurement date of June 30, 2020.

Measurement of the Net Pension Liability

The net pension liability is to be measured as the total pension liability, less the amount of the pension plan's fiduciary net position. In actuarial terms, this will be the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 7.50%), then the following outcomes are expected:

1. The normal cost of the plan is expected to remain approximately level as a percent of pay,
2. The funded status of the plan is expected to gradually improve and is expected to be 100% funded within the next 28 years, and
3. The unfunded liability will grow initially as a dollar amount before beginning to decline.

The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the market value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

- (1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations, in other words, of transferring the obligations to an unrelated third party in an arm's length market value type transaction.
- (2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
- (3) The measurement would produce a different result if the actuarial value of assets were used instead of the market value of assets.

Limitation of Project Scope

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a single discount rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.50%; the municipal bond rate is 2.45% (based on the weekly rate closest to but not later than the measurement date of the Fidelity "20-Year Municipal GO AA Index"); and the resulting single discount rate is 7.50%.

SECTION B

FINANCIAL STATEMENTS

Statement of Pension Expense Under GASB Statement No. 68

Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

A. Expense

1. Service Cost	\$ 518,112
2. Interest on the Total Pension Liability	\$ 2,053,793
3. Current-Period Benefit Changes	\$ (65,850)
4. Employee Contributions (made negative for addition here)	\$ (435,419)
5. Projected Earnings on Plan Investments (made negative for addition here)	\$ (1,655,302)
6. Pension Plan Administrative Expense	\$ 12,268
7. Other Changes in Plan Fiduciary Net Position	\$ (267)
8. Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability <i>Arising from Current Reporting Period</i>	\$ (7,561)
9. Recognition of Outflow (Inflow) of Resources due to assumption changes <i>Arising from Current Reporting Period</i>	\$ (32,212)
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected (7.50%) and actual earnings on Pension Plan Investments <i>Arising from Current Reporting Period</i>	\$ 144,852
11. Increase/(Decrease) from Experience in Current Reporting Period	\$ 532,414
12. Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability <i>Arising from Prior Reporting Periods</i>	\$ 98,559
13. Recognition of Outflow (Inflow) of Resources due to assumption changes <i>Arising from Prior Reporting Periods</i>	\$ (308,928)
14. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on Pension Plan Investments <i>Arising from Prior Reporting Periods</i>	\$ (84,575)
15. Total Pension Expense / (Income)	\$ 237,470

Recognition of Deferred Outflows and Inflows of Resources

Differences between expected and actual experience and changes in assumptions are recognized in pension expense using a systematic and rational method over a closed period equal to the average of the expected remaining service lives of all employees that are provided with pension through the pension plan (active employees and inactive employees) determined as of the beginning of the measurement period.

At the beginning of the current measurement period, the expected remaining service lives of all active employees in the plan was approximately 1,630,541 years. Additionally, the total plan membership (active employees and inactive employees) was 448,800. As a result, the average of the expected remaining service lives for purposes of recognizing the applicable deferred outflows and inflows of resources established in the current measurement period is 4.0000 years.

Additionally, differences between projected and actual earnings on plan investments should be recognized in pension expense using a systematic and rational method over a closed five-year period. For this purpose, the deferred outflows and inflows of resources are recognized in the pension expense as a level dollar amount over the closed period identified above.



Statement of Outflows and Inflows Arising from Current Reporting Period Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

A. Outflows (Inflows) of Resources due to Liabilities

1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	\$ (30,245)
2. Assumption Changes (gains) or losses	\$ (128,849)
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}	4.0000
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability	\$ (7,561)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	\$ (32,212)
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	<u>\$ (39,773)</u>
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	\$ (22,684)
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	\$ (96,637)
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	<u>\$ (119,321)</u>

B. Outflows (Inflows) of Resources due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$ 724,261
2. Recognition period for Assets {in years}	5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	\$ 144,852
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$ 579,409



Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

A. Outflows and Inflows of Resources due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	\$ 98,559	\$ 348,701	\$ (250,142)
2. Due to Assets	\$ 447,051	\$ 386,774	\$ 60,277
3. Total	\$ 545,610	\$ 735,475	\$ (189,865)

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	\$ 98,559	\$ 7,561	\$ 90,998
2. Assumption Changes	\$ -	\$ 341,140	\$ (341,140)
3. Net Difference between projected and actual earnings on pension plan investments	\$ 447,051	\$ 386,774	\$ 60,277
4. Total	\$ 545,610	\$ 735,475	\$ (189,865)

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	\$ 54,662	\$ 22,684	\$ 31,978
2. Assumption Changes	\$ -	\$ 222,274	\$ (222,274)
3. Net Difference between projected and actual earnings on pension plan investments	\$ 606,138	\$ 502,560	\$ 103,578
4. Total	\$ 660,800	\$ 747,518	\$ (86,718)

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources
2021	\$ (339,956)
2022	\$ (5,602)
2023	\$ 113,987
2024	\$ 144,853
2025	\$ -
Thereafter	\$ -
Total	\$ (86,718)



Recognition of Deferred Outflows and Inflows of Resources Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

Year Established	Initial Amount	Initial Recognition Period	Current Year Recognition	Remaining Recognition	Remaining Recognition Period
Deferred Outflow (Inflow) Due to Differences Between Expected and Actual Experience on Liabilities					
2017	\$ 280,527	4.0000	\$ 70,131	\$ 0	0.0000
2018	\$ 8,763	4.0000	\$ 2,191	\$ 2,190	1.0000
2019	\$ 104,946	4.0000	\$ 26,237	\$ 52,472	2.0000
2020	\$ (30,245)	4.0000	\$ (7,561)	\$ (22,684)	3.0000
Total			\$ 90,998	\$ 31,978	
Deferred Outflow (Inflow) Due to Assumption Changes					
2017	\$ (853,320)	4.0000	\$ (213,330)	\$ 0	0.0000
2018	\$ (262,228)	4.0000	\$ (65,557)	\$ (65,557)	1.0000
2019	\$ (120,162)	4.0000	\$ (30,041)	\$ (60,080)	2.0000
2020	\$ (128,849)	4.0000	\$ (32,212)	\$ (96,637)	3.0000
Total			\$ (341,140)	\$ (222,274)	
Deferred Outflow (Inflow) Due to Differences Between Projected and Actual Earnings on Plan Investments					
2016	\$ 1,466,454	5.0000	\$ 293,290	\$ 0	0.0000
2017	\$ (1,354,929)	5.0000	\$ (270,986)	\$ (270,985)	1.0000
2018	\$ (578,939)	5.0000	\$ (115,788)	\$ (231,575)	2.0000
2019	\$ 44,547	5.0000	\$ 8,909	\$ 26,729	3.0000
2020	\$ 724,261	5.0000	\$ 144,852	\$ 579,409	4.0000
Total			\$ 60,277	\$ 103,578	
Deferred Outflow (Inflow) due to All Sources					
Total			\$ (189,865)	\$ (86,718)	

Statement of Fiduciary Net Position (Dollars in Thousands)

Assets in Trust	Market Value	
	June 30, 2020	June 30, 2019
Cash, equivalents, short term securities	\$ 968,024	\$ 628,277
Fixed income	\$ 4,605,517	\$ 4,561,068
Equity	\$ 13,486,107	\$ 13,944,842
Private Markets	\$ 3,536,096	\$ 3,261,949
Other	\$ 5,997	\$ 6,332
Total Assets in Trust	\$ 22,601,741	\$ 22,402,468
Assets Receivable*	\$ 39,659	\$ 50,077
Amounts Payable	\$ (9,941)	\$ (11,577)
Net Position Restricted for Pensions	\$ 22,631,459	\$ 22,440,968

* Includes \$21 million Employer Supplemental Contribution receivable to be paid in July and December.

Statement of Changes in Fiduciary Net Position (Dollars in Thousands)

Change in Assets	Market Value	
	June 30, 2020	June 30, 2019
Year Ending		
1. Fund balance at market value at beginning of year	\$ 22,440,968	\$ 21,553,477
2. Adjustment to match restated PERA fund balance	\$ -	\$ -
3. Fund balance at market value at beginning of year, as restated	\$ 22,440,968	\$ 21,553,477
4. Contributions		
a. Member	\$ 435,419	\$ 424,044
b. Employer*	\$ 509,821	\$ 515,444
c. Other sources	\$ 16,000	\$ 16,000
d. Total contributions	\$ 961,240	\$ 955,488
5. Investment income		
a. Investment income/(loss)	\$ 951,836	\$ 1,568,587
b. Investment expenses	\$ (20,795)	\$ (21,363)
c. Net subtotal	\$ 931,041	\$ 1,547,224
6. Other	\$ 267	\$ 154
7. Total additions: (4.d.) + (5.c.) + (6.)	\$ 1,892,548	\$ 2,502,866
8. Benefits Paid		
a. Annuity benefits	\$ (1,604,842)	\$ (1,536,071)
b. Refunds	\$ (84,947)	\$ (65,834)
c. Total benefits paid	\$ (1,689,789)	\$ (1,601,905)
9. Expenses		
a. Other	\$ -	\$ -
b. Administrative	\$ (12,268)	\$ (13,470)
c. Total expenses	\$ (12,268)	\$ (13,470)
10. Total deductions: (8.c.) + (9.c.)	\$ (1,702,057)	\$ (1,615,375)
11. Net increase (decrease) in net position: (7) + (10)	\$ 190,491	\$ 887,491
12. Transfer between funds	\$ -	\$ -
13. Net position restricted for pensions	\$ 22,631,459	\$ 22,440,968
14. Approximate return on market value of assets	4.2%	7.2%

* Includes \$21 million Employer Supplemental Contribution receivable to be paid in July and December.

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios

Current Period

Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

A. Total pension liability	
1. Service Cost	\$ 518,112
2. Interest on the Total Pension Liability	\$ 2,053,793
3. Changes of benefit terms	\$ (65,850)
4. Difference between expected and actual experience of the Total Pension Liability	\$ (30,245)
5. Changes of assumptions	\$ (128,849)
6. Benefit payments, including refunds of employee contributions	\$ (1,689,789)
7. Net change in total pension liability	\$ 657,172
8. Total pension liability – beginning July 1, 2019	\$ 27,969,744
9. Total pension liability – ending June 30, 2020	<u>\$ 28,626,916</u>
B. Plan fiduciary net position	
1. Contributions – employer	\$ 525,821
2. Contributions – employee	\$ 435,419
3. Net investment income	\$ 931,041
4. Benefit payments, including refunds of employee contributions	\$ (1,689,789)
5. Pension Plan Administrative Expense	\$ (12,268)
6. Other	\$ 267
7. Net change in plan fiduciary net position	\$ 190,491
8. Plan fiduciary net position – beginning July 1, 2019	\$ 22,440,968
9. Plan fiduciary net position – ending June 30, 2020	<u>\$ 22,631,459</u>
C. Net pension liability	<u>\$ 5,995,457</u>
D. Plan fiduciary net position as a percentage of the total pension liability	79.06%
E. Covered-employee payroll[^]	\$ 6,698,754
F. Net pension liability as a percentage of covered-employee payroll	89.50%

[^] Assumed equal to actual member contributions divided by employee contribution rate.

Schedules of Required Supplementary Information

Schedule of Changes in Net Pension Liability and Related Ratios Multiyear (Dollars in Thousands)

Last 10 Fiscal Years (which may be built prospectively)

Fiscal year ending June 30,	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Total Pension Liability										
Service Cost	\$ 518,112	\$ 494,737	\$ 513,422	\$ 471,706	\$ 434,551	\$ 421,602	\$ 388,391			
Interest on the Total Pension Liability	\$ 2,053,793	\$ 1,991,061	\$ 1,948,853	\$ 1,921,869	\$ 1,839,388	\$ 1,712,534	\$ 1,591,756			
Benefit Changes	\$ (65,850)	\$ -	\$ (79,217)	\$ -	\$ -	\$ 1,147,198	\$ -			
Experience	\$ (30,245)	\$ 104,946	\$ 8,763	\$ 280,527	\$ (647,197)	\$ (348,383)	\$ 96,123			
Assumption Changes	\$ (128,849)	\$ (120,162)	\$ (262,228)	\$ (853,320)	\$ 2,119,742	\$ -	\$ 645,499			
Benefit Payments	\$ (1,604,842)	\$ (1,536,071)	\$ (1,470,450)	\$ (1,413,448)	\$ (1,359,176)	\$ (1,235,303)	\$ (1,109,866)			
Refunds	\$ (84,947)	\$ (65,834)	\$ (42,589)	\$ (37,234)	\$ (37,209)	\$ (35,655)	\$ (38,264)			
Net Change in Total Pension Liability	\$ 657,172	\$ 868,677	\$ 616,554	\$ 370,100	\$ 2,350,099	\$ 1,661,993	\$ 1,573,639			
Total Pension Liability - Beginning	\$ 27,969,744	\$ 27,101,067	\$ 26,484,513	\$ 26,114,413	\$ 23,764,314	\$ 22,102,321	\$ 20,528,682			
Total Pension Liability - Ending (a)	\$ 28,626,916	\$ 27,969,744	\$ 27,101,067	\$ 26,484,513	\$ 26,114,413	\$ 23,764,314	\$ 22,102,321			
Plan Fiduciary Net Position										
Employer Contributions	\$ 525,821	\$ 531,444	\$ 504,819	\$ 483,888	\$ 465,978	\$ 435,115	\$ 382,251			
Employee Contributions	\$ 435,419	\$ 424,044	\$ 409,423	\$ 400,204	\$ 375,291	\$ 353,765	\$ 334,495			
Pension Plan Net Investment Income	\$ 931,041	\$ 1,547,224	\$ 2,063,582	\$ 2,682,901	\$ (20,851)	\$ 777,504	\$ 2,760,854			
Benefit Payments	\$ (1,604,842)	\$ (1,536,071)	\$ (1,470,450)	\$ (1,413,448)	\$ (1,359,176)	\$ (1,235,303)	\$ (1,109,866)			
Refunds	\$ (84,947)	\$ (65,834)	\$ (42,589)	\$ (37,234)	\$ (37,209)	\$ (35,655)	\$ (38,264)			
Pension Plan Administrative Expense	\$ (12,268)	\$ (13,470)	\$ (11,943)	\$ (11,292)	\$ (11,350)	\$ (10,367)	\$ (9,861)			
Other*	\$ 267	\$ 154	\$ 56	\$ 651	\$ 431	\$ 891,914	\$ 605			
Net Change in Plan Fiduciary Net Position	\$ 190,491	\$ 887,491	\$ 1,452,898	\$ 2,105,670	\$ (586,886)	\$ 1,176,973	\$ 2,320,214			
Plan Fiduciary Net Position - Beginning	\$ 22,440,968	\$ 21,553,477	\$ 20,100,579	\$ 17,994,909	\$ 18,581,795	\$ 17,404,822	\$ 15,084,608			
Plan Fiduciary Net Position - Ending (b)	\$ 22,631,459	\$ 22,440,968	\$ 21,553,477	\$ 20,100,579	\$ 17,994,909	\$ 18,581,795	\$ 17,404,822			
Net Pension Liability - Ending (a) - (b)	\$ 5,995,457	\$ 5,528,776	\$ 5,547,590	\$ 6,383,934	\$ 8,119,504	\$ 5,182,519	\$ 4,697,499			
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	79.06 %	80.23 %	79.53 %	75.90 %	68.91 %	78.19 %	78.75 %			
Covered-employee payroll	\$ 6,698,754	\$ 6,523,754	\$ 6,298,815	\$ 6,156,985	\$ 5,773,708	\$ 5,549,255	\$ 5,351,920			
Net Pension Liability as a Percentage of covered-employee payroll	89.50 %	84.75 %	88.07 %	103.69 %	140.63 %	93.39 %	87.77 %			
Notes to Schedule:										
N/A										

* For fiscal year ending June 30, 2017, includes \$411 of other income and \$240 due to PERA's restatement of the June 30, 2016 end of year plan fiduciary net position.



Schedules of Required Supplementary Information

Schedule of the Net Pension Liability Multiyear (Dollars in Thousands)

Last 10 Fiscal Years (which may be built prospectively)

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll	Net Pension Liability as a % of Covered Payroll
2011						
2012						
2013						
2014	\$ 22,102,321	\$ 17,404,822	\$ 4,697,499	78.75%	\$ 5,351,920	87.77%
2015	\$ 23,764,314	\$ 18,581,795	\$ 5,182,519	78.19%	\$ 5,549,255	93.39%
2016	\$ 26,114,413	\$ 17,994,909	\$ 8,119,504	68.91%	\$ 5,773,708	140.63%
2017	\$ 26,484,513	\$ 20,100,579	\$ 6,383,934	75.90%	\$ 6,156,985	103.69%
2018	\$ 27,101,067	\$ 21,553,477	\$ 5,547,590	79.53%	\$ 6,298,815	88.07%
2019	\$ 27,969,744	\$ 22,440,968	\$ 5,528,776	80.23%	\$ 6,523,754	84.75%
2020	\$ 28,626,916	\$ 22,631,459	\$ 5,995,457	79.06%	\$ 6,698,754	89.50%

Schedule of Contributions Multiyear (Dollars in Thousands)

Last 10 Fiscal Years

FY Ending June 30,	Actuarially Determined Contribution	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll	Actual Contribution as a % of Covered Payroll
2011	\$ 321,782	\$ 357,596	\$ (35,814)	\$ 5,079,429	7.04%
2012	\$ 371,295	\$ 368,037	\$ 3,258	\$ 5,142,592	7.16
2013	\$ 430,773	\$ 372,652	\$ 58,121	\$ 5,246,928	7.10
2014	\$ 476,321	\$ 382,251	\$ 94,070	\$ 5,351,920	7.14
2015	\$ 523,017	\$ 435,115	\$ 87,902	\$ 5,549,255	7.84
2016	\$ 542,151	\$ 465,978	\$ 76,173	\$ 5,773,708	8.07
2017	\$ 615,083	\$ 483,888	\$ 131,195	\$ 6,156,985	7.86
2018	\$ 609,725	\$ 504,819	\$ 104,906	\$ 6,298,815	8.01
2019	\$ 453,401	\$ 531,444	\$ (78,043)	\$ 6,523,754	8.15
2020	\$ 455,515	\$ 525,821	\$ (70,306)	\$ 6,698,754	7.85

Notes to Schedule of Contributions

Methods and Assumptions Used to Determine Contribution Rates for the Fiscal Year Ending June 30, 2020:

Valuation Date:	June 30, 2019
Notes	Actuarially determined contribution rates are calculated as of each June 30 and apply to the fiscal year beginning on the day after the measurement date.
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	29 years
Asset Valuation Method	5-year smoothed market; no corridor
Inflation	2.50%
Payroll Growth	3.25%
Salary Increases	3.25% to 11.25% including inflation
Investment Rate of Return	7.50%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2016 valuation pursuant to an experience study of the period 2008 - 2014.
Mortality	RP-2014 annuitant generational mortality table, projected with scale MP-2018 from a base year of 2014, white collar adjustment, set forward two years for males and rates adjusted by a factor of 0.90 for females.
Other Information:	
Notes	The plan is assumed to pay a 1.25% post retirement benefit increase for all future years. See separate funding report as of July 1, 2019 for additional detail.

Schedule of Investment Returns Multiyear

Last 10 Fiscal Years

<u>FY Ending June 30,</u>	<u>Annual Return¹</u>
2011	
2012	
2013	
2014	
2015	
2016	
2017	
2018	
2019	
2020	

¹ Annual money-weighted rate of return, net of investment expenses.

It is our understanding that this exhibit will be prepared by PERA with assistance from the State Board of Investment. Please provide a copy of the final exhibit for our files.

SECTION D

ADDITIONAL FINANCIAL STATEMENT DISCLOSURES

Asset Allocation

Long-Term Expected Return on Plan Assets

The long-term expected rate of return on pension plan investments was determined using a building-block method. Estimates for expected future real rates of return (expected returns, net of inflation) were developed for each asset class using both long-term historical returns and long-term capital market expectation from a number of investment management and consulting organizations. The asset class estimates and the target allocations were then combined to produce a geometric, long-term expected rate of return for the portfolio. Inflation expectations were applied to derive the nominal rate of return for the portfolio. For each major asset class that is included in the pension fund's target asset allocation as of June 30, 2020, these estimates are summarized in the following table:

<u>Asset Class</u>	<u>Target Allocation</u>	<u>Long-Term Expected Real Rate of Return (geometric)</u>
Domestic Equity	36%	5.10%
International Equity	17%	5.30%
Private Markets	25%	5.90%
Fixed Income	20%	0.75%
Unallocated Cash	2%	0.00%
Total	100%	

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to PERA for GASB compliance purposes. PERA furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

For purposes of this valuation, the long-term expected rate of return assumption is 7.50%. This assumption is based on a review of inflation and investment return assumptions in our experience study report dated June 27, 2019.

Single Discount Rate

A single discount rate of 7.50% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 7.50%. The projection of cash flows used to determine this single discount rate assumed that plan member, employer, and state contributions will be made at the current statutory contribution rates. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Regarding the sensitivity of the net pension liability to changes in the single discount rate, the following presents the plan's net pension liability, calculated using a single discount rate of 7.50%, as well as what the plan's net pension liability would be if it were calculated using a single discount rate that is 1-percentage-point lower or 1-percentage-point higher:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

(Dollars in Thousands)

	1% Decrease 6.50%	Current Single Discount Rate Assumption 7.50%	1% Increase 8.50%
Total Pension Liability	\$ 32,240,097	\$ 28,626,916	\$ 25,646,332
Net Position Restricted for Pensions	\$ 22,631,459	\$ 22,631,459	\$ 22,631,459
Net Pension Liability	\$ 9,608,638	\$ 5,995,457	\$ 3,014,873

Note that we believe the 8.5% interest rate assumption would not comply with Actuarial Standards of Practice.

GASB Statement No. 68 Reconciliation (Dollars in Thousands)

Current Reporting Period

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Current Period		Pension Expense*
				Deferred Outflows	Deferred Inflows	
Balance Beginning of Year	\$ 27,969,744	\$ 22,440,968	\$ 5,528,776			
Changes for the Year:						
Service Cost	\$ 518,112		\$ 518,112			\$ 518,112
Interest on Total Pension Liability	\$ 2,053,793		\$ 2,053,793			\$ 2,053,793
Interest on Fiduciary Net Position		\$ 1,655,302	\$ (1,655,302)			\$ (1,655,302)
Changes in Benefit Terms	\$ (65,850)		\$ (65,850)			\$ (65,850)
Liability Experience Gains and Losses	\$ (30,245)		\$ (30,245)		\$ 22,684	\$ (7,561)
Changes in Assumptions	\$ (128,849)		\$ (128,849)		\$ 96,637	\$ (32,212)
Contributions - Employer		\$ 525,821	\$ (525,821)			\$ -
Contributions - Employees		\$ 435,419	\$ (435,419)			\$ (435,419)
Asset Gain/(Loss)		\$ (724,261)	\$ 724,261	\$ 579,409		\$ 144,852
Benefit Payouts	\$ (1,689,789)	\$ (1,689,789)	\$ -			\$ -
Administrative Expenses		\$ (12,268)	\$ 12,268			\$ 12,268
Other		\$ 267	\$ (267)			\$ (267)
Net Changes	\$ 657,172	\$ 190,491	\$ 466,681	\$ 579,409	\$ 119,321	\$ 532,414
Balance End of Year	\$ 28,626,916	\$ 22,631,459	\$ 5,995,457			

* Pension Expense from Experience in the Current Reporting Period.



GASB Statement No. 68 Reconciliation (Dollars in Thousands)

Current and Prior Reporting Periods

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Deferred Outflows	Deferred Inflows	Net Deferred Outflows Prior Year	Total Pension Expense*
Balance Beginning of Year	\$ 27,969,744	\$ 22,440,968	\$ 5,528,776				
Changes for the Year:							
Service Cost	\$ 518,112		\$ 518,112				\$ 518,112
Interest on Total Pension Liability	\$ 2,053,793		\$ 2,053,793				\$ 2,053,793
Interest on Fiduciary Net Position		\$ 1,655,302	\$ (1,655,302)				\$ (1,655,302)
Changes in Benefit Terms	\$ (65,850)		\$ (65,850)				\$ (65,850)
Liability Experience Gains and Losses	\$ (30,245)		\$ (30,245)	\$ 54,662	\$ 22,684	\$ 153,221	\$ 90,998
Changes in Assumptions	\$ (128,849)		\$ (128,849)		\$ 222,274	\$ (434,565)	\$ (341,140)
Contributions - Employer		\$ 525,821	\$ (525,821)				\$ -
Contributions - Employees		\$ 435,419	\$ (435,419)				\$ (435,419)
Asset Gain/(Loss)		\$ (724,261)	\$ 724,261	\$ 606,138	\$ 502,560	\$ (560,406)	\$ 60,277
Benefit Payouts	\$ (1,689,789)	\$ (1,689,789)	\$ -				\$ -
Administrative Expenses		\$ (12,268)	\$ 12,268				\$ 12,268
Other		\$ 267	\$ (267)				\$ (267)
Net Changes	\$ 657,172	\$ 190,491	\$ 466,681				\$ 237,470
Balance End of Year	\$ 28,626,916	\$ 22,631,459	\$ 5,995,457	\$ 660,800	\$ 747,518	\$ (841,750)	

* Pension Expense from Experience in the Current and Prior Reporting Periods.



Summary of Population Statistics

	Terminated			Recipients			Total
	Actives	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	
GERP Members on 7/1/2019	154,130	63,311	126,116	92,659	3,740	8,844	448,800
New members	17,212	0	0	0	0	0	17,212
Return to active	2,896	(906)	(1,988)	0	(2)	0	0
Terminated non-vested	(8,562)	0	8,562	0	0	0	0
Service retirements	(2,833)	(2,919)	0	5,752	0	0	0
Terminated deferred	(5,193)	5,193	0	0	0	0	0
Terminated refund/transfer	(3,598)	(1,037)	(26,518)	0	0	0	(31,153)
Deaths	(227)	(159)	(420)	(2,626)	(173)	(541)	(4,146)
New beneficiary	0	0	0	0	0	713	713
Disabled	(84)	0	0	0	84	0	0
Data adjustments	0	1,189	(26,683)	45	32	(35)	(25,452)
Net change	(389)	1,361	(47,047)	3,171	(59)	137	(42,826)
GERP Members on 6/30/2020	153,741	64,672	79,069	95,830	3,681	8,981	405,974

SECTION E

SUMMARY OF BENEFITS

Summary of Plan Provisions - Basic

Following is a summary of the major plan provisions used in the valuation of this report. PERA is solely responsible for the validity, accuracy and comprehensiveness of this information. If any of the plan provisions shown below are not accurate and complete, the valuation results may differ significantly from those shown in this report and may require a revision of this report.

Plan year	July 1 through June 30				
Eligibility	A public employee who is not covered under the Social Security Act. General exceptions are employees covered by other public funds, certain part-time employees and full-time students under age 23.				
Contributions	Shown as a percent of salary: <table style="margin-left: 40px;"> <tr> <td><u>Member</u></td> <td>9.10% of salary</td> </tr> <tr> <td><u>Employer</u></td> <td>11.78% of salary</td> </tr> </table> <p>Member contributions are “picked up” according to the provisions of Internal Revenue Code 414(h).</p>	<u>Member</u>	9.10% of salary	<u>Employer</u>	11.78% of salary
<u>Member</u>	9.10% of salary				
<u>Employer</u>	11.78% of salary				
Allowable service	Service during which member contributions were made. May also include certain leaves of absence and military service.				
Salary	Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes unused annual leaves and sick leave payments, severance payments, Workers’ Compensation benefits and employer-paid flexible spending accounts and employer-paid deferred compensation deposits, cafeteria plans, healthcare expense accounts, day-care expenses, fringe benefits and the cost of insurance coverage.				
Average salary	Average of the five highest successive years of annual salary. Average salary is based on all Allowable Service if less than five years.				
Vesting	Hired before July 1, 2010: 100% vested after 3 years of Allowable Service. Hired after June 30, 2010: 100% vested after 5 years of Allowable Service. (Not applicable since all Basic members were hired before 1968.)				
Retirement					
	<u>Normal retirement benefit</u>				
Age/service requirement	Age 65 and vested. Proportionate retirement annuity is available at age 65 and one year of Allowable Service.				
Amount	2.70% of Average Salary for each year of Allowable Service.				
	<u>Early retirement benefit</u>				
Age/service requirement	(a.) Age 55 and vested. (b.) Any age with 30 years of Allowable Service. (c.) Rule of 90: Age plus Allowable Service totals 90.				



Summary of Plan Provisions – Basic (Continued)

Retirement (Continued)

Early retirement benefit

(Continued)

Amount	<p>The greater of (a) and (b):</p> <p>(a.) 2.20% of Average Salary for each of the first ten years of Allowable Service and 2.70% of Average Salary for each subsequent year with reduction of 0.25% for each month if the Member is under age 65 at time of retirement and has less than 30 years of Allowable Service or if the Member is under age 62 and has 30 or more years of Allowable Service. No reduction if age plus years of Allowable Service totals 90.</p> <p>(b.) 2.70% of Average Salary for each year of Allowable Service assuming augmentation to age 65 at 3.00% per year and actuarial reduction for each month the Member is under age 65. Augmentation adjustment is phased out over a five-year period starting July 1, 2019, resulting in no augmentation adjustment after June 30, 2024.</p>
Form of payment	<p>Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are:</p> <p>25%, 50%, 75% or 100% Joint and Survivor. If a Joint and Survivor benefit is elected and the beneficiary predeceases the annuitant, the annuitant's benefit increases to the Life Annuity amount. This "bounce back" is subsidized by the plan.</p>
Benefit increases	<p>Benefit recipients will receive increases each year in January based upon 50% of the current Social Security increase, not less than 1.0% and not more than 1.5%, beginning January 1, 2019.</p> <p>For retirements on or after January 1, 2024, the first benefit increase is delayed until the retiree reaches Normal Retirement Age (not applicable to Rule of 90 retirees, disability benefit recipients, or survivors).</p> <p>A benefit recipient who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Members receiving benefits for at least one month but less than 12 full months as of June 30 will receive a pro rata increase. Members retired under laws in effect before July 1, 1973 receive an additional lump sum payment each year. In 1989, this lump sum payment is the greater of \$25 times each full year of Allowable Service or the difference between \$400 times each full year of Allowable Service and the sum of benefits paid from any Minnesota public pension plan plus cash payments from the Social Security Administration for the preceding fiscal year July 1, 1988 through June 30, 1989. In each following year, the lump sum payment will increase by the same percentage increase that is applied to regular annuities paid from the fund. Effective January 1, 2002, annual lump sum payment is divided by 12 and paid as a monthly life annuity in the annuity form elected.</p>

Summary of Plan Provisions – Basic (Continued)

Disability

Disability benefit

Age/service
requirement

Total and permanent disability before normal retirement age if vested. Since all remaining active Basic members are over normal retirement age, none are eligible for disability benefits.

Amount

Normal Retirement benefit based on Allowable Service and Average Salary at disability without reduction for commencement before Normal Retirement Age. Supplemental benefit of \$25 per month payable to the later of the normal retirement age or the five-year anniversary of commencement of disability. The disability benefit is reduced to that amount which, when added to Workers' Compensation, does not exceed the salary the disabled Member received as of the date of the disability or the salary currently payable for the same employment position substantially similar to the one the person held as of the date of the disability, whichever is greater.

If a member became disabled prior to July 1, 1997 but did not commence his or her benefit before July 1, 1997, the benefit payable is calculated under the laws in effect at the time the Member became disabled and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.

Payments stop earlier if disability ceases. If death occurs prior to age 65, or within five years of disability, the surviving spouse can receive a refund or a survivor benefit. Dependent children are entitled to dependent child benefits subject to the 70.00% family maximum. Payments revert to a retirement annuity at normal retirement age. Benefits may be reduced on resumption of partial employment.

Form of payment

Same as for retirement.

Benefit increases

Same as for retirement, except benefit increases are paid prior to Normal Retirement.

Summary of Plan Provisions - Basic (Continued)

Disability (Concluded)

Retirement after disability

Age/service
requirement

Normal retirement age.

Amount

Any optional annuity continues. Otherwise, the larger of the disability benefit paid before normal retirement age or the normal retirement benefit available at normal retirement age, or an actuarially equivalent optional annuity.

Benefit increases

Same as for retirement, except benefit increases are paid prior to Normal Retirement.

Death

Surviving spouse benefit

Age/service
requirement

Active Member with 18 months of Allowable Service or while Member is receiving a disability benefit.

Amount

50.00% of salary averaged over last six months. Family benefit is maximum of 70.00% and minimum of 50.00% of average salary. Benefit paid until spouse's death but no payments while spouse is remarried prior to July 1, 1991.

If a member died prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefit as of July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.

Surviving spouse optional annuity may be elected in lieu of this benefit.

Benefit increases

Same as for retirement, except benefit increases are paid prior to Normal Retirement.

Surviving dependent children's benefit

Age/service
requirement

Active Member with 18 months of Allowable Service or while Member is receiving a disability benefit.

Amount

10.00% of salary averaged over last six months for each child. Family benefit minimum (including spouse's benefit) of 50.00% of salary and maximum of 70.00% of average salary. Benefits paid until child marries, dies, or attains age 18 (age 22 if full-time student).



Summary of Plan Provisions - Basic (Continued)

Death

(Concluded)

Surviving dependent children's benefit (Concluded)

Amount
(Concluded)

If a member died prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefit before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.

Benefit increases

Same as for retirement, except benefit increases are paid prior to Normal Retirement.

Surviving spouse optional annuity

Age/service
requirement

Member or former Member who dies before retirement benefits commence and other survivor annuity is waived by spouse.

Amount

Survivor's payment of the 100% joint and survivor benefit the Member could have elected if terminated or an actuarial equivalent term certain annuity. If commencement is prior to age 65 (age 62 if 30 years of service), the benefit is reduced the same as early retirement with half the applicable reduction factor used from age 55 to the actual commencement age. If no surviving spouse, then an actuarial equivalent dependent child benefit is paid to age 20 or for five years if longer.

If a member died prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefit as of July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.

Benefit increases

Same as for retirement, except benefit increases are paid prior to Normal Retirement.

Refund of contributions with interest

Age/service
requirement

Member dies before receiving any retirement benefits and survivor benefits are not payable.

Amount

The excess of the Member's contributions with 6.00% interest until June 30, 2011; 4.00% through June 30, 2018; 3.00% thereafter over any disability or survivor benefits paid.



Summary of Plan Provisions - Basic (Continued)

Termination

Refund of contributions

Age/service
requirement

Termination of public service.

Amount

Member's contributions with 6.00% interest through June 30, 2011. Beginning July 1, 2011, a member's contributions increase at 4.00% interest. Beginning July 1, 2018, a member's contributions increase at 3.00% interest. If a member is vested, a deferred annuity may be elected in lieu of a refund.

Deferred benefit

Age/service
requirement

Fully vested.

Amount

Benefit computed under law in effect at termination and increased by the following "augmentation" percentage compounded annually for terminations prior to 2012:

- (a.) 0.00% before July 1, 1971;
- (b.) 5.00% from July 1, 1971 to January 1, 1981;
- (c.) 3.00% thereafter until the earlier of January 1 of the year following attainment of age 55 and January 1, 2012;
- (d.) 5.00% thereafter until the earlier of the date the annuity begins and January 1, 2012;
- (e.) 1.00% from January 1, 2012 through December 31, 2018; and
- (f.) 0.00% from January 1, 2019, thereafter.

Members who terminate after 2011 will receive no future augmentation.

Members active with a public employer the day prior to the privatization of the employer become vested immediately.

Members who are privatized after June 30, 2020 will receive no future augmentation.

Summary of Plan Provisions - Basic (Continued)

Termination (Concluded)

Deferred benefit (Concluded)

Amount
(Concluded)

Members who are privatized before July 1, 2020 receive enhanced augmentation (unless the enhancement results in a net loss to the Plan). Amount is payable at normal or early retirement. Augmentation is compounded annually through benefit commencement, equal to:

Date of privatization	Augmentation prior to July 1, 2020	July 1, 2020 through December 31, 2023	After December 31, 2023
Prior to January 1, 2007 (or January 1, 2008 for Hutchinson Area Health Care)	5.5% prior to age 55, 7.5% after	2.0%	0.0%
After December 31, 2006 (2007 for Hutchinson Area Health Care) and prior to January 1, 2011	4.0% prior to age 55, 6.0% after	2.0%	0.0%
After December 31, 2010 and prior to July 1, 2020	2.0%*	2.0%*	0.0%

* Reduced to 1% if 2% augmentation resulted in a net loss to the Plan.

If a member terminated employment prior to July 1, 1997 but was not eligible to commence their pension before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997 and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.

Form of payment

Same as for retirement.

Actuarial equivalent factors

Effective July 1, 2019, actuarially equivalent factors based on the RP-2014 mortality table for healthy annuitants for a member turning age 62 in 2021, reflecting projected mortality improvements using Scale MP-2017, white collar adjustment, male rates set forward two years, female rates multiplied by 0.90, blended 40% males, 6.17% post-retirement interest, and 7.50% pre-retirement interest. Reflecting statutory requirements, joint and survivor factors are based on an interest assumption of 6.50%.

Summary of Plan Provisions - Basic (Concluded)

Combined service annuity	<p>Members are eligible for combined service benefits if they:</p> <ul style="list-style-type: none">(a.) Meet minimum retirement age for each plan participated in and total public service meets the vesting requirements of each plan; or(b.) Have three or more years of service under PERA and the covered fund(s) (if hired prior to July 1, 2010). <p>Other requirements for combined service include:</p> <ul style="list-style-type: none">(a.) Member must have at least six months of allowable service credit in each plan worked under; and(b.) Member may not be in receipt of a benefit from another plan. <p>Members who meet the above requirements must have their benefits based on the following:</p> <ul style="list-style-type: none">(a.) Allowable service in all covered plans is combined in order to determine eligibility for early retirement.(b.) Average salary is based on the high five consecutive years during their entire service in all covered plans.
Changes in plan provisions	<p>Augmentation for current privatized members was reduced to 2.0% for the period July 1, 2020 through December 31, 2023 and 0.0% after. Augmentation was eliminated for privatizations occurring after June 30, 2020.</p>

Summary of Plan Provisions - Coordinated

Following is a summary of the major plan provisions used in the valuation of this report. PERA is solely responsible for the validity, accuracy and comprehensiveness of this information. If any of the plan provisions shown below are not accurate and complete, the valuation results may differ significantly from those shown in this report and may require a revision of this report.

Plan year	July 1 through June 30	
Eligibility	A public employee who is covered under the Social Security Act. General exceptions are employees covered by other public funds, certain part-time employees and full-time students under age 23. City managers and persons holding certain elective office positions may choose to become Members.	
Contributions	Shown as a percent of salary:	
<u>Effective date</u>	<u>Member</u>	<u>Employer</u>
January 1, 2015	6.50%	7.50%
	Member contributions are "picked up" according to the provisions of Internal Revenue Code 414(h).	
Allowable service	Service during which member contributions are deducted. May also include certain leaves of absence and military service.	
Salary	Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes unused annual leave and sick leave payments, severance payments, Workers' Compensation benefits and employer-paid flexible spending accounts and employer-paid deferred compensation deposits, cafeteria plans, healthcare expense accounts, day-care expenses, fringe benefits and the cost of insurance coverage.	
Average salary	Average of the five highest successive years of annual salary. Average salary is based on all Allowable Service if less than five years.	
Vesting	Hired before July 1, 2010: 100% vested after three years of Allowable Service. Hired after June 30, 2010: 100% vested after five years of Allowable Service.	
Retirement		
<u>Normal retirement benefit</u>		
Age/service requirement	First hired before July 1, 1989:	
	(a.) Age 65 and vested.	
	(b.) Proportionate retirement annuity is available at age 65 and one year of Allowable Service.	
Amount	1.70% of Average Salary for each year of Allowable Service.	

Summary of Plan Provisions – Coordinated (Continued)

Retirement (Continued)

Normal retirement benefit

(Continued)

Age/service requirement

First hired after June 30, 1989:

- (a.) The greater of age 65 or the age eligible for full Social Security retirement benefits but no later than age 66 and vested.
- (b.) Proportionate Retirement Annuity is available at normal retirement age and one year of Allowable Service.

Amount

1.70% of Average Salary for each year of Allowable Service.

Early retirement benefit

Age/service requirement

First hired before July 1, 1989:

- (a.) Age 55 and vested.
- (b.) Any age with 30 years of Allowable Service.
- (c.) Rule of 90: Age plus Allowable Service totals 90.

First hired after June 30, 1989:

- (a.) Age 55 and vested.

Amount

First hired before July 1, 1989:

The greater of (a) or (b):

- (a.) 1.20% of Average Salary for each of the first ten years of Allowable Service and 1.70% of Average Salary for each subsequent year with reduction of 0.25% for each month the Member is under age 65 at time of retirement or under age 62 if 30 years of Allowable Service. No reduction if age plus years of Allowable Service totals 90.
- (b.) 1.70% of Average Salary for each year of Allowable Service assuming augmentation to age 65 at 3.00% per year and actuarial reduction for each month the Member is under age 65. Augmentation adjustment is phased out over a five-year period starting July 1, 2019, resulting in no augmentation adjustment after June 30, 2024.

First hired after June 30, 1989:

- (a.) 1.70% of Average Salary for each year of Allowable Service assuming augmentation to the age eligible for full Social Security retirement benefit (but not higher than age 66) at 3.00% (2.50% if hired after June 30, 2006) per year and actuarial reduction for each month the member is under the normal retirement age. Augmentation adjustment is phased out over a five-year period starting July 1, 2019, resulting in no augmentation adjustment after June 30, 2024.
-

Summary of Plan Provisions – Coordinated (Continued)

Retirement (Concluded)

Form of payment	<p>Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are:</p> <p>25%, 50%, 75% or 100% Joint and Survivor. If a Joint and Survivor benefit is elected and the beneficiary predeceases the annuitant, the annuitant's benefit increases to the Life Annuity amount. This "bounce back" is subsidized by the plan.</p>
<u>Benefit increases</u>	<p>Benefit recipients receive increases each year in January based upon 50% of the current Social Security increase, not less than 1.0% and not more than 1.5%, beginning January 1, 2019.</p> <p>For retirements on or after January 1, 2024, the first benefit increase is delayed until the retiree reaches Normal Retirement Age (not applicable to Rule of 90 retirees, disability benefit recipients, or survivors).</p> <p>A benefit recipient who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Members receiving benefits for at least one month but less than 12 full months as of June 30 will receive a pro rata increase.</p> <p>Members retired under laws in effect before July 1, 1973 will receive an additional lump sum payment each year. In 1989, this lump sum payment is \$25 times each full year of Allowable Service. In each following year, the lump sum payment will increase by the same percentage increase that is applied to regular annuities paid from the fund.</p>

Disability

Disability benefit

Age/service requirement	Total and permanent disability before normal retirement age if vested.
Amount	<p>Normal Retirement benefit based on Allowable Service and Average Salary at disability without reduction for commencement before normal retirement age. The disability benefit is reduced to that amount which, when added to Workers' Compensation, does not exceed the salary the disabled Member received as of the date of the disability or the salary currently payable for the same employment position substantially similar to the one the person held as of the date of the disability, whichever is greater.</p> <p>If a Member became disabled prior to July 1, 1997 but did not commence his or her benefit before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.</p>



Summary of Plan Provisions – Coordinated (Continued)

Disability (Concluded)

Disability benefit

(Concluded)

Amount

(Concluded)

Payments stop if disability ceases or death occurs. Payments change to a retirement annuity at normal retirement age. Benefits may be reduced on resumption of partial employment.

Form of payment

Same as for retirement.

Benefit increases

Same as for retirement, except benefit increases are paid prior to Normal Retirement.

Retirement after disability

Age/service

requirement

Normal retirement age.

Amount

Any optional annuity continues. Otherwise, the larger of the disability benefit paid before normal retirement age or the normal retirement benefit available at normal retirement age, or an actuarially equivalent optional annuity.

Benefit increases

Same as for retirement, except benefit increases are paid prior to Normal Retirement.

Death

Surviving spouse optional annuity

Age/service

requirement

Member or former Member who dies before retirement or disability benefits commence.

Amount

Survivor's payment of the 100% joint and survivor benefit the Member could have elected if terminated or an actuarial equivalent term certain annuity. If commencement is prior to age 65 (age 62 if 30 years of service), the benefit is reduced the same as early retirement with half the applicable reduction factor used from age 55 to the actual commencement age. If no surviving spouse, then an actuarial equivalent dependent child benefit is paid to age 20 or for five years if longer.

If a member died prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefit before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.

Benefit increases

Same as for retirement, except benefit increases are paid prior to Normal Retirement.



Summary of Plan Provisions – Coordinated (Continued)

Death (Concluded)	
<u>Refund of contributions</u>	
Age/service requirement	Member dies before receiving any retirement benefits and survivor benefits are not payable.
Amount	The excess of the Member's contributions with 6.00% interest until June 30, 2011; 4.00% through June 30, 2018; 3.00% thereafter over any disability or survivor benefits paid.
Termination	
<u>Refund of contributions</u>	
Age/service requirement	Termination of public service.
Amount	Member's contributions with 6.00% interest through June 30, 2011. Beginning July 1, 2011, a member's contributions increase at 4.00% interest. Beginning July 1, 2018, a member's contributions increase at 3.00% interest. If a member is vested, a deferred annuity may be elected in lieu of a refund.
<u>Deferred benefit</u>	
Age/service requirement	Fully vested.
Amount	Benefit computed under law in effect at termination and increased by the following percentage (augmentation) compounded annually for terminations prior to 2012: <ul style="list-style-type: none"> (a.) 0.00% before July 1, 1971; (b.) 5.00% from July 1, 1971 to January 1, 1981; (c.) 3.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of January 1 of the year following attainment of age 55 and January 1, 2012; (d.) 5.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of the date the annuity begins and January 1, 2012; or (e.) 1.00% from January 1, 2012 through December 31, 2018; and (f.) 0.00% from January 1, 2019, thereafter. <p>Members who terminate after 2011 will receive no future augmentation.</p> <p>Members active with a public employer the day prior to the privatization of the employer become vested immediately.</p> <p>Members who are privatized after June 30, 2020 will receive no future augmentation.</p>

Summary of Plan Provisions – Coordinated (Continued)

Termination (Concluded)

Deferred benefit (Concluded)

Amount
(Concluded)

Members who are privatized before July 1, 2020 receive enhanced augmentation (unless the enhancement results in a net loss to the Plan). Amount is payable at normal or early retirement. Augmentation is compounded annually through benefit commencement, equal to:

Date of privatization	Augmentation prior to July 1, 2020	July 1, 2020 through December 31, 2023	After December 31, 2023
Prior to January 1, 2007 (or January 1, 2008 for Hutchinson Area Health Care)	5.5% prior to age 55, 7.5% after	2.0%	0.0%
After December 31, 2006 (2007 for Hutchinson Area Health Care) and prior to January 1, 2011	4.0% prior to age 55, 6.0% after	2.0%	0.0%
After December 31, 2010 and prior to July 1, 2020	2.0%*	2.0%*	0.0%

* Reduced to 1% if 2% augmentation resulted in a net loss to the Plan.

If a member terminated employment prior to July 1, 1997 but was not eligible to commence their pension before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997 and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.

Form of payment

Same as for retirement.

Actuarial equivalent factors

Effective July 1, 2019, actuarially equivalent factors based on the RP-2014 mortality table for healthy annuitants for a member turning age 62 in 2021, reflecting projected mortality improvements using Scale MP-2017, white collar adjustment, male rates set forward two years, female rates multiplied by 0.90, blended 40% males, 6.17% post-retirement interest, and 7.50% pre-retirement interest. Reflecting statutory requirements, joint and survivor factors are based on an interest assumption of 6.50%.

Summary of Plan Provisions – Coordinated (Concluded)

Combined service annuity

Members are eligible for combined service benefits if they:

- (a.) Meet minimum retirement age for each plan participated in and total public service meets the vesting requirements of each plan; or
- (b.) Have three or more years of service under PERA and the covered fund(s) (if hired prior to July 1, 2010).

Other requirements for combined service include:

- (a.) Member must have at least six months of allowable service credit in each plan worked under; and
- (b.) Member may not be in receipt of a benefit from another plan.

Members who meet the above requirements must have their benefit based on the following:

- (a.) Allowable service in all covered plans is combined in order to determine eligibility for early retirement.
 - (b.) Average salary is based on the high five consecutive years during their entire service in all covered plans.
-

Changes in plan provisions

Augmentation for current privatized members was reduced to 2.0% for the period July 1, 2020 through December 31, 2023 and 0.0% after. Augmentation was eliminated for privatizations occurring after June 30, 2020.

Summary of Plan Provisions – Minneapolis Employees Retirement Fund (MERF)

Following is a summary of the major plan provisions used in the valuation of this report. PERA is solely responsible for the validity, accuracy and comprehensiveness of this information. If any of the plan provisions shown below are not accurate and complete, the valuation results may differ significantly from those shown in this report and may require a revision of this report.

Plan year	July 1 through June 30																				
Eligibility/employee rule	<p>An employee of the City of Minneapolis, the Metropolitan Airports Commission, the Met Council/Environmental Services, the Municipal Employees Retirement Fund, and Special School District No. 1 if covered prior to July 1, 1978. Employees covered July 1, 1978 or later are covered by the Public Employees Retirement Association (PERA) Plan.</p> <p>Effective July 1, 1992, licensed peace officers and firefighters who are employed by the Metropolitan Airports Commission and covered by the Minneapolis Employees Retirement Fund will receive the greater of retirement, disability, or survivor benefits under:</p> <p>a) The Minneapolis Employees Retirement Fund; or</p> <p>b) The Public Employees Retirement Association (PERA) Police & Fire Plan.</p>																				
Full consolidation	The MERF Division fully merged with PERA's General Employees Retirement Plan, effective January 1, 2015. Upon consolidation, state and employer contributions were revised as shown herein.																				
Contributions																					
Member	9.75% of salary																				
Employer	9.75% of salary (Employer Regular Contributions)																				
	Employer Regular and Additional Contributions will be paid as long as there are active members.																				
	Employer Supplemental Contributions equal \$21,000,000 per year through September 2031.																				
Contribution allocation	Employer Supplemental Contributions are allocated to the employers in proportion to their share of the actuarial accrued liability of MERF on July 1, 2009, as follows:																				
	<table border="1"> <thead> <tr> <th>Employer</th> <th>Allocation</th> </tr> </thead> <tbody> <tr> <td>City of Minneapolis</td> <td>54.78%</td> </tr> <tr> <td>Minneapolis Park Board</td> <td>10.33%</td> </tr> <tr> <td>Met Council</td> <td>1.74%</td> </tr> <tr> <td>Metropolitan Airport Commission</td> <td>5.76%</td> </tr> <tr> <td>Municipal Building Commission</td> <td>1.08%</td> </tr> <tr> <td>Minneapolis School District No. 1</td> <td>23.04%</td> </tr> <tr> <td>Hennepin County</td> <td>3.17%</td> </tr> <tr> <td>MnSCU</td> <td>0.10%</td> </tr> <tr> <td>Total</td> <td>100.00%</td> </tr> </tbody> </table>	Employer	Allocation	City of Minneapolis	54.78%	Minneapolis Park Board	10.33%	Met Council	1.74%	Metropolitan Airport Commission	5.76%	Municipal Building Commission	1.08%	Minneapolis School District No. 1	23.04%	Hennepin County	3.17%	MnSCU	0.10%	Total	100.00%
Employer	Allocation																				
City of Minneapolis	54.78%																				
Minneapolis Park Board	10.33%																				
Met Council	1.74%																				
Metropolitan Airport Commission	5.76%																				
Municipal Building Commission	1.08%																				
Minneapolis School District No. 1	23.04%																				
Hennepin County	3.17%																				
MnSCU	0.10%																				
Total	100.00%																				

Summary of Plan Provisions – Minneapolis Employees Retirement Fund (MERF) (Continued)

State contributions	The State's contributions equal \$16,000,000 and are payable by September 30 each year through September 15, 2031.
Allowable service	Service during which member contributions were made. Allowable Service may also include certain leaves of absence, military service and service prior to becoming a member. Allowable service also includes time on duty disability provided that the member returns to active service if the disability ceases.
Salary	All amounts of salary, wages or compensation.
Average salary	Average of the five highest calendar years of salary out of the last ten calendar years.
Retirement	
<u>Normal retirement benefit</u>	
Age/service requirement	Age 60 and 10 years of employment. Any age with 30 years of employment. Proportionate retirement annuity is available at age 65 and one year allowable service.
Amount	2.00% of average salary for the first 10 years of allowable service plus 2.50% of average salary for each subsequent year of allowable service.

Summary of Plan Provisions – Minneapolis Employees Retirement Fund (MERF) (Continued)

Disability

Disability benefit

Age/service
requirement

Total and permanent disability before age 60 with five years of allowable service, or no allowable service if a work-related disability.

Amount

2.00% of average salary for the first 10 years of disability service plus 2.50% of average salary for each subsequent year of disability service. Disability service is the greater of (a) or (b) where:

- (a.) equals allowable service plus service projected to age 60, subject to a maximum of 22 years, and
- (b.) equals allowable service.

Benefit is reduced by Workers' Compensation benefits.

Payments stop at age 60 or earlier if disability ceases or death occurs. Benefits may be reduced on resumption of partial employment.

Disability after separation

Age/service
requirement

Total and permanent disability after electing to receive a retirement benefit but before age 60.

Amount

Actuarial equivalent of total credit to member's account.

Retirement after disability

Age/service
requirement

Total and permanent disability after electing to receive a retirement benefit but before age 60. Employee is still disabled after age 60.

Amount

Benefit continues according to the option selected.

Summary of Plan Provisions – Minneapolis Employees Retirement Fund (MERF) (Continued)

Death

Pre-retirement survivor's spouse benefit

Age/service requirement

Active member with 18 months of allowable service.

Amount

30% of salary averaged over the last six months to the surviving spouse plus 10% of salary averaged over the last six months to each surviving child. Maximum benefit is \$900 per month.

Pre-retirement survivor's spouse annuity

Age/service requirement

Active member or former member who dies before retirement with 20 years of allowable service.

Amount

Actuarial equivalent of a single life annuity which would have been paid as a retirement benefit on the date of death without regard to eligibility age for retirement benefit. If there is no surviving spouse, the designated beneficiary may be a dependent child or dependent parent.

Refund of accumulated city contributions

Age/service requirement

Active member or former member dies after 10 years of allowable service and prior to retirement.

Amount

Present value of the City's annual installments of \$60 or, in the case of a former member, the net accumulation of city deposits. This benefit is not payable if survivor's benefits are paid.

Lump sum

Age/service requirement

Death prior to service or disability retirement without an eligible surviving beneficiary.

Amount

\$750 with less than 10 years allowable service, or \$1,500 with 10 or more years of allowable service.

Refund of member contributions at death

Age/service requirement

Active member or former member dies before retirement.

Amount

The excess of the member's contributions (exclusive of the contributions to the survivor's account) plus interest to the date of death.



Summary of Plan Provisions – Minneapolis Employees Retirement Fund (MERF) (Concluded)

Termination	
<u>Deferred benefit</u>	
Age/service requirement	Three years of allowable service.
Amount	Benefit computed under law in effect at termination and increased by the following percentage (augmentation), compounded annually: (a.) 0.00% prior to July 1, 1971, (b.) 5.00% from July 1, 1971 to January 1, 1981, and (c.) 3.00% thereafter until the annuity begins. Amount is payable at or after age 60.
<u>Refund of member contributions upon termination</u>	
Age/service requirement	Termination of public service.
Amount	Member's contributions with interest. A deferred annuity may be elected in lieu of a refund if vested.
Form of payment	<ul style="list-style-type: none"> ▪ Life annuity. ▪ Life annuity with 3, 5, 10 or 15 years guaranteed. ▪ Life annuity with lump sum death benefit. ▪ Joint & Survivor (with or without bounce back feature).
Optional form conversion factors	1986 PET mortality table with a one-year setback, blended 50% male and 50% female, and 5% interest.
Two dollar bill and annuity	Optional Two Dollar Bill money purchase annuity available at age 55 with 20 years of service if member had service prior to June 28, 1973. According to PERA, this option is rarely utilized. We have assumed that remaining active members will not elect this optional benefit.
Benefit increases	Benefit recipients receive increases each year in January based upon 50% of the current Social Security increase, not less than 1.0% and not more than 1.5%, beginning January 1, 2019. For retirements on or after January 1, 2024, the first benefit increase is delayed until the retiree reaches Normal Retirement Age (not applicable to Rule of 90 retirees, disability benefit recipients, or survivors).
Changes in plan provisions	There were no changes on plan provisions since the previous valuation.

SECTION F

**ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS
USED FOR THE DETERMINATION OF TOTAL PENSION LIABILITY
AND RELATED VALUES**

Actuarial Methods Used for the Determination of Total Pension Liability and Related Values

Actuarial Cost Method

Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an **Individual Entry-Age Actuarial Cost Method** having the following characteristics:

- (i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and
- (ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains/(losses), as they occur, reduce (increase) the Total Pension Liability.

Valuation of Future Post-Retirement Benefit Increases

Benefit increases after retirement will equal 50% of the Social Security Cost of Living Adjustment, not less than 1.0% and not more than 1.5%, beginning January 1, 2019. Stochastic modeling was used to determine the assumption that benefit increases will equal 1.25% per year. This is only an assumption; actual increases will depend on actual experience.

Asset Valuation Method

Fair value of assets.

Summary of Actuarial Assumptions – Basic and Coordinated

The following assumptions were used in valuing the liabilities and benefits under the plan. The assumptions are based on the last experience study dated June 27, 2019. The Allowance for Combined Service Annuity assumptions are based on an analysis completed by the LCPR actuary and documented in a report dated October 2016.

Investment return	7.50% per annum.
Benefit increases after retirement	1.25% per annum.
Salary increases	Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service earned during the year.
Inflation	2.25% per year.
Payroll growth	3.00% per year.
Mortality rates	
Healthy pre-retirement	Pub-2010 General Employee Mortality Table adjusted for mortality improvements using projection scale MP-2019. Rates are multiplied by a factor of 1.07 for males and 0.98 for females.
Healthy post-retirement	Pub-2010 Healthy Retired General Mortality Table adjusted for mortality improvements using projection scale MP-2019. Male rates are multiplied by a factor of 1.02 and female rates are multiplied by a factor of 0.90.
Disabled retirees	Pub-2010 General/Teacher Disabled Retiree Mortality Table, adjusted for mortality improvements using projection scale MP-2019. Rates are set forward two years for males and set forward four years for females.
Notes	The Pub-2010 Employee Mortality Table as published by the Society of Actuaries (SOA) contains mortality rates for ages 18 to 80 and the annuitant mortality table contains mortality rates for ages 50 to 120. We have extended the annuitant mortality table as needed for members and beneficiaries younger than age 50 who are receiving a benefit by deriving rates based on the employee table and the juvenile table. Similarly, we have extended the employee table as needed for members older than age 80 by deriving rates based on the annuitant table.
Retirement	Members retiring from active status are assumed to retire according to the age-related rates shown in the tables. Members who have attained the highest assumed retirement age are assumed to retire in one year. Note that significant plan changes reflected in this report may result in behavior changes that are not anticipated in the current retirement rates.

Summary of Actuarial Assumptions – Basic and Coordinated (Continued)

Withdrawal	Service-related rates based on experience; see table of sample rates.
Disability	Age-related rates based on experience; see table of sample rates.
Allowance for combined service annuity	Liabilities for former members are increased by 15.0% for vested members and 3.0% for non-vested members to account for the effect of some participants having eligibility for a Combined Service Annuity.
Administrative expenses	In the valuation year, equal to prior year administrative expenses expressed as a percentage of prior year payroll. In each subsequent year, equal to the initial administrative expense percentage applied to payroll for the closed group.
Refund of contributions	Account balances accumulate interest until normal retirement dates at the rates described in the Summary of Plan Provisions and are discounted back to the valuation date. All employees withdrawing after becoming eligible for a deferred benefit are assumed to take the larger of contributions accumulated with interest or the value of the deferred benefit.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at Normal Retirement.
Percentage married	80% of male and 70% of female active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Males are assumed to have a beneficiary three years younger, while females are assumed to have a beneficiary one year older. For members in payment status, actual spouse date of birth is used, if provided.
Eligible children	Retiring members are assumed to have no dependent children.
Form of payment	<p>Married members retiring from active status are assumed to elect subsidized joint and survivor form of annuity as follows:</p> <p>Males: 10% elect 25% Joint & Survivor option 15% elect 50% Joint & Survivor option 10% elect 75% Joint & Survivor option 45% elect 100% Joint & Survivor option</p> <p>Females: 10% elect 25% Joint & Survivor option 10% elect 50% Joint & Survivor option 5% elect 75% Joint & Survivor option 30% elect 100% Joint & Survivor option</p> <p>Remaining married members and unmarried members are assumed to elect the Straight Life option.</p> <p>Members receiving deferred annuities (including current terminated deferred members) are assumed to elect a straight life annuity.</p>
Eligibility testing	Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.
Decrement operation	Withdrawal decrements do not operate during retirement eligibility. Decrements are assumed to occur mid-fiscal year.
Service credit accruals	It is assumed that members accrue one year of service credit per year.



Summary of Actuarial Assumptions – Basic and Coordinated (Continued)

Pay increases	Pay increases are assumed to happen at the beginning of the fiscal year. This is equivalent to assuming that reported earnings are pensionable earnings for the year ending on the valuation date.
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Unknown data for certain members	<p>To prepare this report, GRS has used and relied on participant data supplied by the Fund. Although GRS has reviewed the data in accordance with Actuarial Standards of Practice No. 23, GRS has not verified or audited any of the data or information provided.</p> <p>In cases where submitted data was missing or incomplete, the following assumptions, based on average results for applicable members at the time of the last experience study, were applied:</p> <p><u>Data for active members:</u> There were 3,659 members reported with a salary less than \$100. We used prior year salary (2,454 members), if available; otherwise high five salary with a 10% load to account for salary increases (810 members). If neither prior year salary or high five salary was available, we assumed a value of \$30,000.</p> <p>There were also 3,159 members reported without a gender and 177 members reported with an invalid date of birth. We assumed a date of birth based on an entry age of 36 and female gender.</p> <p><u>Data for terminated members:</u> We calculated benefits for these members using the reported Average Salary and credited service. If Average Salary was not reported (121 members), we assumed a value of \$24,000. If credited service was not reported (161 members), we assumed credited service was elapsed time from hire to termination date (113 members); if elapsed time was not available, we assumed nine years. If termination date was invalid or not reported (139 members), we assumed the termination date was equal to hire date plus credited service; otherwise the valuation date unless they are noted as a pre-July 1, 1989 hire, then June 30, 1989. If reported termination date occurs prior to reported hire date, the two dates were swapped.</p> <p>There were 93 members reported with an invalid date of birth and 551 members reported without a gender. We assumed a date of birth of July 1, 1967 and female gender.</p> <p><u>Data for retired members:</u> There were 164 members reported without a gender. We assumed retirees are female and beneficiaries are male. There were three members reported with an invalid date of birth. We assumed a date of birth of July 1, 1944.</p>
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Summary of Actuarial Assumptions – Basic and Coordinated (Continued)

Unknown data for certain members (Concluded)	<u>Data for retired members (Continued):</u> Because PERA reclassifies disabled members as retirees once the member reaches Normal Retirement Age, we compare the members that PERA reports as retirees to our disabled group from the last valuation. If a member was disabled in the prior valuation, we reclassify that member as a disabled retiree in this year's valuation. We reclassified 2,296 retirees as disabled retirees in this valuation.
Changes in actuarial assumptions	<p>The price inflation assumption was decreased from 2.50% to 2.25%.</p> <p>The payroll growth assumption was decreased from 3.25% to 3.00%.</p> <p>Assumed salary increase rates were changed as recommended in the June 30, 2019 experience study. The net effect is assumed rates that average 0.25% less than previous rates.</p> <p>Assumed rates of retirement were changed as recommended in the June 30, 2019 experience study. The changes result in more unreduced (normal) retirements and slightly fewer Rule of 90 and early retirements.</p> <p>Assumed rates of termination were changed as recommended in the June 30, 2019 experience study. The new rates are based on service and are generally lower than the previous rates for years 2-5 and slightly higher thereafter.</p> <p>Assumed rates of disability were changed as recommended in the June 30, 2019 experience study. The change results in fewer predicted disability retirements for males and females.</p> <p>The base mortality table for healthy annuitants and employees was changed from the RP-2014 table to the Pub-2010 General Mortality table, with adjustments. The base mortality table for disabled annuitants was changed from the RP-2014 disabled annuitant mortality table to the PUB-2010 General/Teacher disabled annuitant mortality table, with adjustments.</p> <p>The mortality improvement scale was changed from Scale MP-2018 to Scale MP-2019.</p> <p>The assumed spouse age difference was changed from two years older for females to one year older.</p> <p>The assumed number of married male new retirees electing the 100% Joint & Survivor option changed from 35% to 45%. The assumed number of married female new retirees electing the 100% Joint & Survivor option changed from 15% to 30%. The corresponding number of married new retirees electing the Life annuity option was adjusted accordingly.</p>

Summary of Actuarial Assumptions – Basic and Coordinated (Continued)

Age in 2020	Percentage of Members Dying Each Year*					
	Healthy Post- Retirement Mortality		Healthy Pre- Retirement Mortality		Disability Mortality	
	Male	Female	Male	Female	Male	Female
20	0.04%	0.01%	0.04%	0.01%	0.37%	0.18%
25	0.03	0.01	0.04	0.01	0.31	0.29
30	0.05	0.02	0.05	0.02	0.54	0.49
35	0.07	0.03	0.07	0.03	0.74	0.77
40	0.08	0.04	0.09	0.04	0.95	1.04
45	0.11	0.06	0.11	0.05	1.24	1.35
50	0.28	0.19	0.15	0.08	1.70	1.63
55	0.43	0.27	0.23	0.13	2.23	2.01
60	0.65	0.37	0.36	0.19	2.79	2.32
65	0.94	0.53	0.51	0.28	3.39	2.62
70	1.46	0.87	0.70	0.43	4.06	3.37
75	2.48	1.55	1.07	0.72	5.40	5.04
80	4.48	2.85	1.70	1.23	7.88	8.04
85	8.18	5.35	7.22	5.01	11.77	12.23
90	14.13	9.93	14.82	10.81	18.05	17.24

* Generally, mortality rates are expected to increase as age increases. These standard mortality rates have been adjusted slightly to prevent decreasing mortality rates. The adjustment has no material effect on results.

Age	Rates of Disability Retirement	
	Male	Female
20	0.01%	0.01%
25	0.01	0.01
30	0.01	0.01
35	0.02	0.02
40	0.04	0.04
45	0.06	0.05
50	0.11	0.10
55	0.26	0.14
60	0.53	0.21
65	0.00	0.00
70	0.00	0.00

Summary of Actuarial Assumptions – Basic and Coordinated (Continued)

Age	Rates of Service Retirement		
	Rule of 90 Eligible	Tier 1	Tier 2
55	20.0%	4.0%	4.0%
56	15.0%	4.0%	4.0%
57	15.0%	5.0%	4.0%
58	15.0%	5.0%	5.0%
59	15.0%	6.0%	5.0%
60	15.0%	8.0%	6.0%
61	15.0%	10.0%	8.0%
62	30.0%	20.0%	15.0%
63	25.0%	20.0%	15.0%
64	25.0%	20.0%	15.0%
65	40.0%	40.0%	25.0%
66	35.0%	35.0%	35.0%
67	25.0%	25.0%	25.0%
68	25.0%	25.0%	25.0%
69	25.0%	25.0%	25.0%
70	25.0%	25.0%	25.0%
71+	100.0%	100.0%	100.0%

Summary of Actuarial Assumptions – Basic and Coordinated (Concluded)

Salary Scale					Rates of Termination	
Year	Increase	Year	Male	Female		
1	10.25%	1	21.50%	21.50%		
2	7.25	2	16.25	17.25		
3	6.00	3	11.00	13.00		
4	5.50	4	9.00	11.00		
5	5.00	5	8.00	9.00		
6	4.70	6	7.00	8.50		
7	4.50	7	6.25	8.00		
8	4.40	8	5.50	7.50		
9	4.30	9	5.00	7.00		
10	4.20	10	4.50	6.00		
11	4.00	11	4.25	5.50		
12	3.90	12	4.00	5.25		
13	3.80	13	3.75	5.00		
14	3.70	14	3.50	4.75		
15	3.65	15	3.00	4.25		
16	3.60	16	2.75	3.75		
17	3.50	17	2.50	3.50		
18	3.40	18	2.25	3.00		
19	3.40	19	2.00	2.80		
20	3.40	20	1.90	2.70		
21	3.30	21	1.85	2.60		
22	3.30	22	1.80	2.50		
23	3.30	23	1.75	2.40		
24	3.20	24	1.70	2.30		
25	3.20	25	1.65	2.20		
26	3.10	26	1.60	2.10		
27	3.00	27	1.55	2.00		
28	3.00	28	1.50	1.50		
29	3.00	29	1.00	1.50		
30+	3.00	30	1.00	1.50		

Summary of Actuarial Assumptions - MERF

The following assumptions were used in valuing the liabilities and benefits under the plan for MERF members only. Assumptions regarding investment return, mortality, benefit increases, and Combined Service Annuity (CSA) are the same as shown in the Basic and Coordinated Plan assumption summary.

Salary increases	Total reported pay for prior calendar year increased 1.86% (half year of 3.75%, compounded) to prior fiscal year and 3.75% annually for each future year.
Retirement	Active members are assumed to retire at age 61, or immediately if currently age 61 or older.
Withdrawal	Rates are shown in rate table.
Disability	Age-related rates based on experience; see table of sample rates.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 60.
Percentage married	66.67% of active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Females are assumed to be three years younger than their male spouses. For members in payment status, actual spouse date of birth is used, if provided.
Eligible children	Retiring members are assumed to have no dependent children.
Form of payment	Members are assumed to elect a life annuity.
Unknown data for certain members	<p>To prepare this report, GRS has used and relied on participant data supplied by the Fund. Although GRS has reviewed the data in accordance with Actuarial Standards of Practice No. 23, GRS has not verified or audited any of the data or information provided.</p> <p>In cases where submitted data was missing or incomplete, the following assumptions were applied:</p> <p>There were no members with missing or invalid dates of birth.</p> <p><u>Data for active members:</u> There were no active members with missing salary or service.</p> <p><u>Data for terminated members:</u> Benefits were provided by PERA for all members.</p> <p><u>Data for Retired members:</u> There was 1 member reported without a gender. We assumed male gender.</p>

Summary of Actuarial Assumptions – MERF (Continued)

Unknown data for certain members (Concluded)

Data for retired members (Continued):

Because PERA reclassifies disabled members as retirees once the member reaches Normal Retirement Age, we compare the members that PERA reports as retirees to our disabled group from the last valuation. If a member was disabled in the prior valuation, we reclassify that member as a disabled retiree in this year's valuation. We reclassified 77 retirees as disabled retirees in this valuation.

Summary of Actuarial Assumptions – MERF (Concluded)

Age	Rates of Termination		Rates of Disability Retirement	
	Male	Female	Male	Female
20	21.00%	21.00%	0.21%	0.21%
25	11.00	11.00	0.21	0.21
30	5.00	5.00	0.23	0.23
35	1.50	1.50	0.30	0.30
40	1.00	1.00	0.41	0.41
45	1.00	1.00	0.61	0.61
50	1.00	1.00	0.93	0.93
55	1.00	1.00	1.60	1.60
60	1.00	1.00	0.00	0.00
65	0.00	0.00	0.00	0.00
70	0.00	0.00	0.00	0.00

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

Calculation of the Single Discount Rate

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed long-term expected rate of return is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal bond rate is required, as described in the following paragraph.

The *Single Discount Rate* (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.50%; the municipal bond rate is 2.45%; and **the resulting single discount rate is 7.50%**.

The tables in this section provide background for the development of the single discount rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities).

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate. It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

Single Discount Rate Development Projection of Contributions (Dollars in Thousands)

Fiscal Year Ending	Payroll			Projected Contributions					
	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Employer		Contributions on Future Payroll toward Current UAL*		Additional State Contributions	Total Contributions
				Contributions from Current Employees	Contributions for Current Employees	Payroll toward Current UAL*			
2020	\$ 6,698,754	\$ -	\$ 6,698,754						
2021	\$ 6,583,256	\$ 215,894	\$ 6,799,150	\$ 427,912	\$ 493,744	\$ 13,256	\$ 37,000	\$ 971,912	
2022	\$ 6,212,346	\$ 790,779	\$ 7,003,125	\$ 403,802	\$ 465,926	\$ 48,554	\$ 37,000	\$ 955,282	
2023	\$ 5,874,403	\$ 1,338,816	\$ 7,213,219	\$ 381,836	\$ 440,580	\$ 82,203	\$ 37,000	\$ 941,619	
2024	\$ 5,586,618	\$ 1,842,997	\$ 7,429,615	\$ 363,130	\$ 418,996	\$ 113,160	\$ 37,000	\$ 932,286	
2025	\$ 5,317,620	\$ 2,334,884	\$ 7,652,504	\$ 345,645	\$ 398,821	\$ 143,362	\$ 37,000	\$ 924,828	
2026	\$ 5,065,621	\$ 2,816,458	\$ 7,882,079	\$ 329,265	\$ 379,922	\$ 172,931	\$ 37,000	\$ 919,118	
2027	\$ 4,829,963	\$ 3,288,578	\$ 8,118,541	\$ 313,948	\$ 362,247	\$ 201,919	\$ 37,000	\$ 915,114	
2028	\$ 4,608,156	\$ 3,753,941	\$ 8,362,097	\$ 299,530	\$ 345,612	\$ 230,492	\$ 37,000	\$ 912,634	
2029	\$ 4,399,168	\$ 4,213,792	\$ 8,612,960	\$ 285,946	\$ 329,938	\$ 258,727	\$ 37,000	\$ 911,611	
2030	\$ 4,201,319	\$ 4,670,030	\$ 8,871,349	\$ 273,086	\$ 315,099	\$ 286,740	\$ 37,000	\$ 911,925	
2031	\$ 4,012,350	\$ 5,125,140	\$ 9,137,490	\$ 260,803	\$ 300,926	\$ 314,684	\$ 37,000	\$ 913,413	
2032	\$ 3,830,526	\$ 5,581,088	\$ 9,411,614	\$ 248,984	\$ 287,289	\$ 342,679	\$ -	\$ 878,952	
2033	\$ 3,654,432	\$ 6,039,531	\$ 9,693,963	\$ 237,538	\$ 274,082	\$ 370,827	\$ -	\$ 882,447	
2034	\$ 3,484,139	\$ 6,500,643	\$ 9,984,782	\$ 226,469	\$ 261,310	\$ 399,139	\$ -	\$ 886,918	
2035	\$ 3,319,922	\$ 6,964,403	\$ 10,284,325	\$ 215,795	\$ 248,994	\$ 427,614	\$ -	\$ 892,403	
2036	\$ 3,160,512	\$ 7,432,343	\$ 10,592,855	\$ 205,433	\$ 237,038	\$ 456,346	\$ -	\$ 898,817	
2037	\$ 3,004,517	\$ 7,906,124	\$ 10,910,641	\$ 195,294	\$ 225,339	\$ 485,436	\$ -	\$ 906,069	
2038	\$ 2,852,284	\$ 8,385,676	\$ 11,237,960	\$ 185,398	\$ 213,921	\$ 514,880	\$ -	\$ 914,199	
2039	\$ 2,703,288	\$ 8,871,811	\$ 11,575,099	\$ 175,714	\$ 202,747	\$ 544,729	\$ -	\$ 923,190	
2040	\$ 2,555,805	\$ 9,366,547	\$ 11,922,352	\$ 166,127	\$ 191,685	\$ 575,106	\$ -	\$ 932,918	
2041	\$ 2,408,644	\$ 9,871,378	\$ 12,280,022	\$ 156,562	\$ 180,648	\$ 606,103	\$ -	\$ 943,313	
2042	\$ 2,261,789	\$ 10,386,634	\$ 12,648,423	\$ 147,016	\$ 169,634	\$ 637,739	\$ -	\$ 954,389	
2043	\$ 2,115,763	\$ 10,912,112	\$ 13,027,875	\$ 137,525	\$ 158,682	\$ 670,004	\$ -	\$ 966,211	
2044	\$ 1,970,917	\$ 11,447,795	\$ 13,418,712	\$ 128,110	\$ 147,819	\$ 702,895	\$ -	\$ 978,824	
2045	\$ 1,827,273	\$ 11,994,000	\$ 13,821,273	\$ 118,773	\$ 137,046	\$ 736,432	\$ -	\$ 992,251	
2046	\$ 1,684,540	\$ 12,551,371	\$ 14,235,911	\$ 109,495	\$ 126,341	\$ 770,654	\$ -	\$ 1,006,490	
2047	\$ 1,543,231	\$ 13,119,758	\$ 14,662,989	\$ 100,310	\$ 115,742	\$ 805,553	\$ -	\$ 1,021,605	
2048	\$ 1,404,566	\$ 13,698,312	\$ 15,102,878	\$ 91,297	\$ 105,342	\$ 841,076	\$ -	\$ 1,037,715	
2049	\$ 1,269,386	\$ 14,286,579	\$ 15,555,965	\$ 82,510	\$ 95,204	\$ 877,196	\$ -	\$ 1,054,910	
2050	\$ 1,138,504	\$ 14,884,139	\$ 16,022,643	\$ 74,003	\$ 85,388	\$ 913,886	\$ -	\$ 1,073,277	
2051	\$ 1,012,400	\$ 15,490,923	\$ 16,503,323	\$ 65,806	\$ 75,930	\$ 951,143	\$ -	\$ 1,092,879	
2052	\$ 891,600	\$ 16,106,822	\$ 16,998,422	\$ 57,954	\$ 66,870	\$ 988,959	\$ -	\$ 1,113,783	
2053	\$ 777,444	\$ 16,730,931	\$ 17,508,375	\$ 50,534	\$ 58,308	\$ 1,027,279	\$ -	\$ 1,136,121	
2054	\$ 670,674	\$ 17,362,952	\$ 18,033,626	\$ 43,594	\$ 50,301	\$ 1,066,085	\$ -	\$ 1,159,980	
2055	\$ 571,800	\$ 18,002,835	\$ 18,574,635	\$ 37,167	\$ 42,885	\$ 1,105,374	\$ -	\$ 1,185,426	
2056	\$ 481,128	\$ 18,650,746	\$ 19,131,874	\$ 31,273	\$ 36,085	\$ 1,145,156	\$ -	\$ 1,212,514	
2057	\$ 398,640	\$ 19,307,190	\$ 19,705,830	\$ 25,912	\$ 29,898	\$ 1,185,461	\$ -	\$ 1,241,271	
2058	\$ 324,698	\$ 19,972,307	\$ 20,297,005	\$ 21,105	\$ 24,352	\$ 1,226,300	\$ -	\$ 1,271,757	
2059	\$ 259,677	\$ 20,646,239	\$ 20,905,916	\$ 16,879	\$ 19,476	\$ 1,267,679	\$ -	\$ 1,304,034	
2060	\$ 203,440	\$ 21,329,653	\$ 21,533,093	\$ 13,224	\$ 15,258	\$ 1,309,641	\$ -	\$ 1,338,123	
2061	\$ 155,946	\$ 22,023,140	\$ 22,179,086	\$ 10,137	\$ 11,696	\$ 1,352,221	\$ -	\$ 1,374,054	
2062	\$ 116,639	\$ 22,727,819	\$ 22,844,458	\$ 7,582	\$ 8,748	\$ 1,395,488	\$ -	\$ 1,411,818	
2063	\$ 84,653	\$ 23,445,139	\$ 23,529,792	\$ 5,502	\$ 6,349	\$ 1,439,532	\$ -	\$ 1,451,383	
2064	\$ 59,747	\$ 24,175,939	\$ 24,235,686	\$ 3,884	\$ 4,481	\$ 1,484,403	\$ -	\$ 1,492,768	
2065	\$ 40,815	\$ 24,921,941	\$ 24,962,756	\$ 2,653	\$ 3,061	\$ 1,530,207	\$ -	\$ 1,535,921	
2066	\$ 26,743	\$ 25,684,896	\$ 25,711,639	\$ 1,738	\$ 2,006	\$ 1,577,053	\$ -	\$ 1,580,797	
2067	\$ 16,758	\$ 26,466,230	\$ 26,482,988	\$ 1,089	\$ 1,257	\$ 1,625,027	\$ -	\$ 1,627,373	
2068	\$ 9,891	\$ 27,267,587	\$ 27,277,478	\$ 643	\$ 742	\$ 1,674,230	\$ -	\$ 1,675,615	
2069	\$ 5,520	\$ 28,090,282	\$ 28,095,802	\$ 359	\$ 414	\$ 1,724,743	\$ -	\$ 1,725,516	
2070	\$ 2,880	\$ 28,935,796	\$ 28,938,676	\$ 187	\$ 216	\$ 1,776,658	\$ -	\$ 1,777,061	

* Equal to total contributions (14.00% of payroll for new employees) net of normal cost and expenses (7.86% of payroll).



Single Discount Rate Development

Projection of Contributions (Dollars in Thousands) (Concluded)

Fiscal Year Ending	Payroll			Projected Contributions					
	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward Current UAL*	Additional State Contributions	Total Contributions	
2071	\$ 1,301	\$ 29,805,536	\$ 29,806,837	\$ 85	\$ 98	\$ 1,830,060	\$ -	\$ 1,830,243	
2072	\$ 487	\$ 30,700,555	\$ 30,701,042	\$ 32	\$ 36	\$ 1,885,014	\$ -	\$ 1,885,082	
2073	\$ 178	\$ 31,621,895	\$ 31,622,073	\$ 12	\$ 13	\$ 1,941,584	\$ -	\$ 1,941,609	
2074	\$ 67	\$ 32,570,668	\$ 32,570,735	\$ 4	\$ 5	\$ 1,999,839	\$ -	\$ 1,999,848	
2075	\$ 19	\$ 33,547,838	\$ 33,547,857	\$ 1	\$ 1	\$ 2,059,837	\$ -	\$ 2,059,839	
2076	\$ 4	\$ 34,554,289	\$ 34,554,293	\$ -	\$ -	\$ 2,121,633	\$ -	\$ 2,121,633	
2077	\$ -	\$ 35,590,922	\$ 35,590,922	\$ -	\$ -	\$ 2,185,283	\$ -	\$ 2,185,283	
2078	\$ -	\$ 36,658,649	\$ 36,658,649	\$ -	\$ -	\$ 2,250,841	\$ -	\$ 2,250,841	
2079	\$ -	\$ 37,758,409	\$ 37,758,409	\$ -	\$ -	\$ 2,318,366	\$ -	\$ 2,318,366	
2080	\$ -	\$ 38,891,161	\$ 38,891,161	\$ -	\$ -	\$ 2,387,917	\$ -	\$ 2,387,917	
2081	\$ -	\$ 40,057,896	\$ 40,057,896	\$ -	\$ -	\$ 2,459,555	\$ -	\$ 2,459,555	
2082	\$ -	\$ 41,259,633	\$ 41,259,633	\$ -	\$ -	\$ 2,533,341	\$ -	\$ 2,533,341	
2083	\$ -	\$ 42,497,422	\$ 42,497,422	\$ -	\$ -	\$ 2,609,342	\$ -	\$ 2,609,342	
2084	\$ -	\$ 43,772,345	\$ 43,772,345	\$ -	\$ -	\$ 2,687,622	\$ -	\$ 2,687,622	
2085	\$ -	\$ 45,085,515	\$ 45,085,515	\$ -	\$ -	\$ 2,768,251	\$ -	\$ 2,768,251	
2086	\$ -	\$ 46,438,080	\$ 46,438,080	\$ -	\$ -	\$ 2,851,298	\$ -	\$ 2,851,298	
2087	\$ -	\$ 47,831,223	\$ 47,831,223	\$ -	\$ -	\$ 2,936,837	\$ -	\$ 2,936,837	
2088	\$ -	\$ 49,266,159	\$ 49,266,159	\$ -	\$ -	\$ 3,024,942	\$ -	\$ 3,024,942	
2089	\$ -	\$ 50,744,144	\$ 50,744,144	\$ -	\$ -	\$ 3,115,690	\$ -	\$ 3,115,690	
2090	\$ -	\$ 52,266,469	\$ 52,266,469	\$ -	\$ -	\$ 3,209,161	\$ -	\$ 3,209,161	
2091	\$ -	\$ 53,834,463	\$ 53,834,463	\$ -	\$ -	\$ 3,305,436	\$ -	\$ 3,305,436	
2092	\$ -	\$ 55,449,497	\$ 55,449,497	\$ -	\$ -	\$ 3,404,599	\$ -	\$ 3,404,599	
2093	\$ -	\$ 57,112,981	\$ 57,112,981	\$ -	\$ -	\$ 3,506,737	\$ -	\$ 3,506,737	
2094	\$ -	\$ 58,826,371	\$ 58,826,371	\$ -	\$ -	\$ 3,611,939	\$ -	\$ 3,611,939	
2095	\$ -	\$ 60,591,162	\$ 60,591,162	\$ -	\$ -	\$ 3,720,297	\$ -	\$ 3,720,297	
2096	\$ -	\$ 62,408,897	\$ 62,408,897	\$ -	\$ -	\$ 3,831,906	\$ -	\$ 3,831,906	
2097	\$ -	\$ 64,281,164	\$ 64,281,164	\$ -	\$ -	\$ 3,946,863	\$ -	\$ 3,946,863	
2098	\$ -	\$ 66,209,599	\$ 66,209,599	\$ -	\$ -	\$ 4,065,269	\$ -	\$ 4,065,269	
2099	\$ -	\$ 68,195,887	\$ 68,195,887	\$ -	\$ -	\$ 4,187,227	\$ -	\$ 4,187,227	
2100	\$ -	\$ 70,241,763	\$ 70,241,763	\$ -	\$ -	\$ 4,312,844	\$ -	\$ 4,312,844	
2101	\$ -	\$ 72,349,016	\$ 72,349,016	\$ -	\$ -	\$ 4,442,230	\$ -	\$ 4,442,230	
2102	\$ -	\$ 74,519,487	\$ 74,519,487	\$ -	\$ -	\$ 4,575,496	\$ -	\$ 4,575,496	
2103	\$ -	\$ 76,755,071	\$ 76,755,071	\$ -	\$ -	\$ 4,712,761	\$ -	\$ 4,712,761	
2104	\$ -	\$ 79,057,723	\$ 79,057,723	\$ -	\$ -	\$ 4,854,144	\$ -	\$ 4,854,144	
2105	\$ -	\$ 81,429,455	\$ 81,429,455	\$ -	\$ -	\$ 4,999,769	\$ -	\$ 4,999,769	
2106	\$ -	\$ 83,872,339	\$ 83,872,339	\$ -	\$ -	\$ 5,149,762	\$ -	\$ 5,149,762	
2107	\$ -	\$ 86,388,509	\$ 86,388,509	\$ -	\$ -	\$ 5,304,254	\$ -	\$ 5,304,254	
2108	\$ -	\$ 88,980,164	\$ 88,980,164	\$ -	\$ -	\$ 5,463,382	\$ -	\$ 5,463,382	
2109	\$ -	\$ 91,649,569	\$ 91,649,569	\$ -	\$ -	\$ 5,627,284	\$ -	\$ 5,627,284	
2110	\$ -	\$ 94,399,056	\$ 94,399,056	\$ -	\$ -	\$ 5,796,102	\$ -	\$ 5,796,102	
2111	\$ -	\$ 97,231,028	\$ 97,231,028	\$ -	\$ -	\$ 5,969,985	\$ -	\$ 5,969,985	
2112	\$ -	\$ 100,147,959	\$ 100,147,959	\$ -	\$ -	\$ 6,149,085	\$ -	\$ 6,149,085	
2113	\$ -	\$ 103,152,397	\$ 103,152,397	\$ -	\$ -	\$ 6,333,557	\$ -	\$ 6,333,557	
2114	\$ -	\$ 106,246,969	\$ 106,246,969	\$ -	\$ -	\$ 6,523,564	\$ -	\$ 6,523,564	
2115	\$ -	\$ 109,434,378	\$ 109,434,378	\$ -	\$ -	\$ 6,719,271	\$ -	\$ 6,719,271	
2116	\$ -	\$ 112,717,410	\$ 112,717,410	\$ -	\$ -	\$ 6,920,849	\$ -	\$ 6,920,849	
2117	\$ -	\$ 116,098,932	\$ 116,098,932	\$ -	\$ -	\$ 7,128,474	\$ -	\$ 7,128,474	
2118	\$ -	\$ 119,581,900	\$ 119,581,900	\$ -	\$ -	\$ 7,342,329	\$ -	\$ 7,342,329	
2119	\$ -	\$ 123,169,357	\$ 123,169,357	\$ -	\$ -	\$ 7,562,599	\$ -	\$ 7,562,599	
2120	\$ -	\$ 126,864,438	\$ 126,864,438	\$ -	\$ -	\$ 7,789,476	\$ -	\$ 7,789,476	

* Equal to total contributions (14.00% of payroll for new employees) net of normal cost and expenses (7.86% of payroll).



Single Discount Rate Development

Projection of Plan Fiduciary Net Position (Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.50%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2021	\$ 22,631,459	\$ 971,912	\$ 1,722,768	\$ 11,850	\$ 1,669,275	\$ 23,538,028
2022	\$ 23,538,028	\$ 955,282	\$ 1,799,153	\$ 11,182	\$ 1,733,867	\$ 24,416,842
2023	\$ 24,416,842	\$ 941,620	\$ 1,875,252	\$ 10,574	\$ 1,796,496	\$ 25,269,132
2024	\$ 25,269,132	\$ 932,287	\$ 1,946,177	\$ 10,056	\$ 1,857,481	\$ 26,102,667
2025	\$ 26,102,667	\$ 924,829	\$ 2,018,251	\$ 9,572	\$ 1,917,085	\$ 26,916,758
2026	\$ 26,916,758	\$ 919,117	\$ 2,093,189	\$ 9,118	\$ 1,975,189	\$ 27,708,757
2027	\$ 27,708,757	\$ 915,114	\$ 2,167,317	\$ 8,694	\$ 2,031,728	\$ 28,479,588
2028	\$ 28,479,588	\$ 912,634	\$ 2,239,569	\$ 8,295	\$ 2,086,803	\$ 29,231,161
2029	\$ 29,231,161	\$ 911,610	\$ 2,306,774	\$ 7,919	\$ 2,140,673	\$ 29,968,751
2030	\$ 29,968,751	\$ 911,925	\$ 2,371,076	\$ 7,562	\$ 2,193,649	\$ 30,695,687
2031	\$ 30,695,687	\$ 913,413	\$ 2,431,555	\$ 7,222	\$ 2,246,010	\$ 31,416,333
2032	\$ 31,416,333	\$ 878,952	\$ 2,489,901	\$ 6,895	\$ 2,296,653	\$ 32,095,142
2033	\$ 32,095,142	\$ 882,448	\$ 2,545,985	\$ 6,578	\$ 2,345,639	\$ 32,770,666
2034	\$ 32,770,666	\$ 886,919	\$ 2,600,114	\$ 6,271	\$ 2,394,486	\$ 33,445,686
2035	\$ 33,445,686	\$ 892,403	\$ 2,652,469	\$ 5,976	\$ 2,443,397	\$ 34,123,041
2036	\$ 34,123,041	\$ 898,818	\$ 2,703,694	\$ 5,689	\$ 2,492,559	\$ 34,805,035
2037	\$ 34,805,035	\$ 906,068	\$ 2,752,375	\$ 5,408	\$ 2,542,194	\$ 35,495,514
2038	\$ 35,495,514	\$ 914,200	\$ 2,797,680	\$ 5,134	\$ 2,592,621	\$ 36,199,521
2039	\$ 36,199,521	\$ 923,190	\$ 2,837,538	\$ 4,866	\$ 2,644,295	\$ 36,924,602
2040	\$ 36,924,602	\$ 932,919	\$ 2,874,291	\$ 4,600	\$ 2,697,690	\$ 37,676,320
2041	\$ 37,676,320	\$ 943,313	\$ 2,908,711	\$ 4,336	\$ 2,753,194	\$ 38,459,780
2042	\$ 38,459,780	\$ 954,390	\$ 2,940,539	\$ 4,071	\$ 2,811,199	\$ 39,280,759
2043	\$ 39,280,759	\$ 966,210	\$ 2,969,582	\$ 3,808	\$ 2,872,148	\$ 40,145,727
2044	\$ 40,145,727	\$ 978,823	\$ 2,996,158	\$ 3,548	\$ 2,936,516	\$ 41,061,360
2045	\$ 41,061,360	\$ 992,250	\$ 3,020,288	\$ 3,289	\$ 3,004,804	\$ 42,034,837
2046	\$ 42,034,837	\$ 1,006,490	\$ 3,042,718	\$ 3,032	\$ 3,077,523	\$ 43,073,100
2047	\$ 43,073,100	\$ 1,021,605	\$ 3,063,794	\$ 2,778	\$ 3,155,183	\$ 44,183,316
2048	\$ 44,183,316	\$ 1,037,716	\$ 3,082,822	\$ 2,528	\$ 3,238,351	\$ 45,374,033
2049	\$ 45,374,033	\$ 1,054,910	\$ 3,099,502	\$ 2,285	\$ 3,327,682	\$ 46,654,838
2050	\$ 46,654,838	\$ 1,073,277	\$ 3,112,272	\$ 2,049	\$ 3,423,957	\$ 48,037,751
2051	\$ 48,037,751	\$ 1,092,879	\$ 3,122,300	\$ 1,822	\$ 3,528,037	\$ 49,534,545
2052	\$ 49,534,545	\$ 1,113,783	\$ 3,129,570	\$ 1,605	\$ 3,640,806	\$ 51,157,959
2053	\$ 51,157,959	\$ 1,136,121	\$ 3,133,113	\$ 1,399	\$ 3,763,262	\$ 52,922,830
2054	\$ 52,922,830	\$ 1,159,980	\$ 3,132,012	\$ 1,207	\$ 3,896,553	\$ 54,846,144
2055	\$ 54,846,144	\$ 1,185,426	\$ 3,126,364	\$ 1,029	\$ 4,041,953	\$ 56,946,130
2056	\$ 56,946,130	\$ 1,212,514	\$ 3,115,898	\$ 866	\$ 4,200,841	\$ 59,242,721
2057	\$ 59,242,721	\$ 1,241,271	\$ 3,100,280	\$ 718	\$ 4,374,725	\$ 61,757,719
2058	\$ 61,757,719	\$ 1,271,757	\$ 3,079,909	\$ 584	\$ 4,565,228	\$ 64,514,211
2059	\$ 64,514,211	\$ 1,304,034	\$ 3,052,912	\$ 467	\$ 4,774,151	\$ 67,539,017
2060	\$ 67,539,017	\$ 1,338,122	\$ 3,019,002	\$ 366	\$ 5,003,519	\$ 70,861,290
2061	\$ 70,861,290	\$ 1,374,053	\$ 2,977,632	\$ 281	\$ 5,255,539	\$ 74,512,969
2062	\$ 74,512,969	\$ 1,411,818	\$ 2,928,334	\$ 210	\$ 5,532,624	\$ 78,528,867
2063	\$ 78,528,867	\$ 1,451,383	\$ 2,871,521	\$ 152	\$ 5,837,367	\$ 82,945,944
2064	\$ 82,945,944	\$ 1,492,767	\$ 2,805,939	\$ 108	\$ 6,172,588	\$ 87,805,252
2065	\$ 87,805,252	\$ 1,535,921	\$ 2,732,730	\$ 73	\$ 6,541,322	\$ 93,149,692
2066	\$ 93,149,692	\$ 1,580,797	\$ 2,653,740	\$ 48	\$ 6,946,717	\$ 99,023,418
2067	\$ 99,023,418	\$ 1,627,373	\$ 2,569,367	\$ 30	\$ 7,392,069	\$ 105,473,463
2068	\$ 105,473,463	\$ 1,675,615	\$ 2,480,509	\$ 18	\$ 7,880,871	\$ 112,549,422
2069	\$ 112,549,422	\$ 1,725,516	\$ 2,388,644	\$ 10	\$ 8,416,788	\$ 120,303,072
2070	\$ 120,303,072	\$ 1,777,061	\$ 2,294,848	\$ 5	\$ 9,003,664	\$ 128,788,944

For purposes of this projection, we assumed the current fixed rate contribution would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.



Single Discount Rate Development

Projection of Plan Fiduciary Net Position (Dollars in Thousands)

(Concluded)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.50%	Projected Ending Plan Net Position
(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)	
2071	\$ 128,788,944	\$ 1,830,242	\$ 2,199,671	\$ 2	\$ 9,645,567	\$ 138,065,080
2072	\$ 138,065,080	\$ 1,885,082	\$ 2,103,412	\$ 1	\$ 10,346,841	\$ 148,193,590
2073	\$ 148,193,590	\$ 1,941,609	\$ 2,006,343	\$ -	\$ 11,112,135	\$ 159,240,991
2074	\$ 159,240,991	\$ 1,999,848	\$ 1,908,780	\$ -	\$ 11,946,428	\$ 171,278,487
2075	\$ 171,278,487	\$ 2,059,840	\$ 1,810,924	\$ -	\$ 12,855,052	\$ 184,382,455
2076	\$ 184,382,455	\$ 2,121,634	\$ 1,712,934	\$ -	\$ 13,843,733	\$ 198,634,888
2077	\$ 198,634,888	\$ 2,185,283	\$ 1,615,001	\$ -	\$ 14,918,616	\$ 214,123,786
2078	\$ 214,123,786	\$ 2,250,841	\$ 1,517,347	\$ -	\$ 16,086,293	\$ 230,943,573
2079	\$ 230,943,573	\$ 2,318,366	\$ 1,420,236	\$ -	\$ 17,353,839	\$ 249,195,542
2080	\$ 249,195,542	\$ 2,387,917	\$ 1,323,968	\$ -	\$ 18,728,842	\$ 268,988,333
2081	\$ 268,988,333	\$ 2,459,555	\$ 1,228,881	\$ -	\$ 20,219,441	\$ 290,438,448
2082	\$ 290,438,448	\$ 2,533,341	\$ 1,135,343	\$ -	\$ 21,834,361	\$ 313,670,807
2083	\$ 313,670,807	\$ 2,609,342	\$ 1,043,742	\$ -	\$ 23,582,959	\$ 338,819,366
2084	\$ 338,819,366	\$ 2,687,622	\$ 954,484	\$ -	\$ 25,475,270	\$ 366,027,774
2085	\$ 366,027,774	\$ 2,768,251	\$ 867,978	\$ -	\$ 27,522,055	\$ 395,450,102
2086	\$ 395,450,102	\$ 2,851,298	\$ 784,625	\$ -	\$ 29,734,857	\$ 427,251,632
2087	\$ 427,251,632	\$ 2,936,837	\$ 704,810	\$ -	\$ 32,126,060	\$ 461,609,719
2088	\$ 461,609,719	\$ 3,024,942	\$ 628,883	\$ -	\$ 34,708,957	\$ 498,714,735
2089	\$ 498,714,735	\$ 3,115,690	\$ 557,156	\$ -	\$ 37,497,816	\$ 538,771,085
2090	\$ 538,771,085	\$ 3,209,161	\$ 489,893	\$ -	\$ 40,507,960	\$ 581,998,313
2091	\$ 581,998,313	\$ 3,305,436	\$ 427,301	\$ -	\$ 43,755,852	\$ 628,632,300
2092	\$ 628,632,300	\$ 3,404,599	\$ 369,532	\$ -	\$ 47,259,180	\$ 678,926,547
2093	\$ 678,926,547	\$ 3,506,737	\$ 316,672	\$ -	\$ 51,036,956	\$ 733,153,568
2094	\$ 733,153,568	\$ 3,611,939	\$ 268,749	\$ -	\$ 55,109,621	\$ 791,606,379
2095	\$ 791,606,379	\$ 3,720,297	\$ 225,731	\$ -	\$ 59,499,155	\$ 854,600,100
2096	\$ 854,600,100	\$ 3,831,906	\$ 187,522	\$ -	\$ 64,229,201	\$ 922,473,685
2097	\$ 922,473,685	\$ 3,946,863	\$ 153,969	\$ -	\$ 69,325,189	\$ 995,591,768
2098	\$ 995,591,768	\$ 4,065,269	\$ 124,863	\$ -	\$ 74,814,477	\$ 1,074,346,651
2099	\$ 1,074,346,651	\$ 4,187,227	\$ 99,941	\$ -	\$ 80,726,501	\$ 1,159,160,438
2100	\$ 1,159,160,438	\$ 4,312,844	\$ 78,897	\$ -	\$ 87,092,936	\$ 1,250,487,321
2101	\$ 1,250,487,321	\$ 4,442,230	\$ 61,389	\$ -	\$ 93,947,861	\$ 1,348,816,023
2102	\$ 1,348,816,023	\$ 4,575,496	\$ 47,048	\$ -	\$ 101,327,949	\$ 1,454,672,420
2103	\$ 1,454,672,420	\$ 4,712,761	\$ 35,491	\$ -	\$ 109,272,658	\$ 1,568,622,348
2104	\$ 1,568,622,348	\$ 4,854,144	\$ 26,339	\$ -	\$ 117,824,446	\$ 1,691,274,599
2105	\$ 1,691,274,599	\$ 4,999,769	\$ 19,220	\$ -	\$ 127,028,989	\$ 1,823,284,137
2106	\$ 1,823,284,137	\$ 5,149,762	\$ 13,785	\$ -	\$ 136,935,428	\$ 1,965,355,542
2107	\$ 1,965,355,542	\$ 5,304,254	\$ 9,715	\$ -	\$ 147,596,622	\$ 2,118,246,703
2108	\$ 2,118,246,703	\$ 5,463,382	\$ 6,729	\$ -	\$ 159,069,428	\$ 2,282,772,784
2109	\$ 2,282,772,784	\$ 5,627,284	\$ 4,581	\$ -	\$ 171,414,998	\$ 2,459,810,485
2110	\$ 2,459,810,485	\$ 5,796,102	\$ 3,069	\$ -	\$ 184,699,098	\$ 2,650,302,616
2111	\$ 2,650,302,616	\$ 5,969,985	\$ 2,025	\$ -	\$ 198,992,449	\$ 2,855,263,025
2112	\$ 2,855,263,025	\$ 6,149,085	\$ 1,319	\$ -	\$ 214,371,100	\$ 3,075,781,891
2113	\$ 3,075,781,891	\$ 6,333,557	\$ 851	\$ -	\$ 230,916,825	\$ 3,313,031,422
2114	\$ 3,313,031,422	\$ 6,523,564	\$ 545	\$ -	\$ 248,717,548	\$ 3,568,271,989
2115	\$ 3,568,271,989	\$ 6,719,271	\$ 349	\$ -	\$ 267,867,804	\$ 3,842,858,715
2116	\$ 3,842,858,715	\$ 6,920,849	\$ 224	\$ -	\$ 288,469,235	\$ 4,138,248,575
2117	\$ 4,138,248,575	\$ 7,128,474	\$ 144	\$ -	\$ 310,631,123	\$ 4,456,008,028
2118	\$ 4,456,008,028	\$ 7,342,329	\$ 94	\$ -	\$ 334,470,958	\$ 4,797,821,221
2119	\$ 4,797,821,221	\$ 7,562,599	\$ 62	\$ -	\$ 360,115,060	\$ 5,165,498,818
2120	\$ 5,165,498,818	\$ 7,789,476	\$ 48	\$ -	\$ 387,699,234	\$ 5,560,987,480

For purposes of this projection, we assumed the current fixed rate contribution would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.



Single Discount Rate Development

Present Values of Projected Benefit Payments

(Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v ^{^(a)-.5}	(g)=(e)*vf ^{^(a)-.5}	(h)=(c)/(1+sdr) ^{^(a)-.5}
2021	\$ 22,631,459	\$ 1,722,768	\$ 1,722,768	\$ -	\$ 1,661,585	\$ -	\$ 1,661,585
2022	\$ 23,538,028	\$ 1,799,153	\$ 1,799,153	\$ -	\$ 1,614,193	\$ -	\$ 1,614,193
2023	\$ 24,416,842	\$ 1,875,252	\$ 1,875,252	\$ -	\$ 1,565,087	\$ -	\$ 1,565,087
2024	\$ 25,269,131	\$ 1,946,177	\$ 1,946,177	\$ -	\$ 1,510,959	\$ -	\$ 1,510,959
2025	\$ 26,102,666	\$ 2,018,251	\$ 2,018,251	\$ -	\$ 1,457,595	\$ -	\$ 1,457,595
2026	\$ 26,916,758	\$ 2,093,189	\$ 2,093,189	\$ -	\$ 1,406,248	\$ -	\$ 1,406,248
2027	\$ 27,708,759	\$ 2,167,317	\$ 2,167,317	\$ -	\$ 1,354,464	\$ -	\$ 1,354,464
2028	\$ 28,479,590	\$ 2,239,569	\$ 2,239,569	\$ -	\$ 1,301,970	\$ -	\$ 1,301,970
2029	\$ 29,231,163	\$ 2,306,774	\$ 2,306,774	\$ -	\$ 1,247,479	\$ -	\$ 1,247,479
2030	\$ 29,968,753	\$ 2,371,076	\$ 2,371,076	\$ -	\$ 1,192,793	\$ -	\$ 1,192,793
2031	\$ 30,695,688	\$ 2,431,555	\$ 2,431,555	\$ -	\$ 1,137,877	\$ -	\$ 1,137,877
2032	\$ 31,416,333	\$ 2,489,901	\$ 2,489,901	\$ -	\$ 1,083,889	\$ -	\$ 1,083,889
2033	\$ 32,095,142	\$ 2,545,985	\$ 2,545,985	\$ -	\$ 1,030,979	\$ -	\$ 1,030,979
2034	\$ 32,770,666	\$ 2,600,114	\$ 2,600,114	\$ -	\$ 979,441	\$ -	\$ 979,441
2035	\$ 33,445,685	\$ 2,652,469	\$ 2,652,469	\$ -	\$ 929,453	\$ -	\$ 929,453
2036	\$ 34,123,041	\$ 2,703,694	\$ 2,703,694	\$ -	\$ 881,305	\$ -	\$ 881,305
2037	\$ 34,805,035	\$ 2,752,375	\$ 2,752,375	\$ -	\$ 834,580	\$ -	\$ 834,580
2038	\$ 35,495,514	\$ 2,797,680	\$ 2,797,680	\$ -	\$ 789,132	\$ -	\$ 789,132
2039	\$ 36,199,521	\$ 2,837,538	\$ 2,837,538	\$ -	\$ 744,535	\$ -	\$ 744,535
2040	\$ 36,924,601	\$ 2,874,291	\$ 2,874,291	\$ -	\$ 701,561	\$ -	\$ 701,561
2041	\$ 37,676,319	\$ 2,908,711	\$ 2,908,711	\$ -	\$ 660,430	\$ -	\$ 660,430
2042	\$ 38,459,780	\$ 2,940,539	\$ 2,940,539	\$ -	\$ 621,076	\$ -	\$ 621,076
2043	\$ 39,280,759	\$ 2,969,582	\$ 2,969,582	\$ -	\$ 583,452	\$ -	\$ 583,452
2044	\$ 40,145,727	\$ 2,996,158	\$ 2,996,158	\$ -	\$ 547,603	\$ -	\$ 547,603
2045	\$ 41,061,361	\$ 3,020,288	\$ 3,020,288	\$ -	\$ 513,501	\$ -	\$ 513,501
2046	\$ 42,034,838	\$ 3,042,718	\$ 3,042,718	\$ -	\$ 481,222	\$ -	\$ 481,222
2047	\$ 43,073,100	\$ 3,063,794	\$ 3,063,794	\$ -	\$ 450,750	\$ -	\$ 450,750
2048	\$ 44,183,316	\$ 3,082,822	\$ 3,082,822	\$ -	\$ 421,906	\$ -	\$ 421,906
2049	\$ 45,374,032	\$ 3,099,502	\$ 3,099,502	\$ -	\$ 394,594	\$ -	\$ 394,594
2050	\$ 46,654,837	\$ 3,112,272	\$ 3,112,272	\$ -	\$ 368,577	\$ -	\$ 368,577
2051	\$ 48,037,750	\$ 3,122,300	\$ 3,122,300	\$ -	\$ 343,967	\$ -	\$ 343,967
2052	\$ 49,534,543	\$ 3,129,570	\$ 3,129,570	\$ -	\$ 320,714	\$ -	\$ 320,714
2053	\$ 51,157,958	\$ 3,133,113	\$ 3,133,113	\$ -	\$ 298,676	\$ -	\$ 298,676
2054	\$ 52,922,828	\$ 3,132,012	\$ 3,132,012	\$ -	\$ 277,741	\$ -	\$ 277,741
2055	\$ 54,846,142	\$ 3,126,364	\$ 3,126,364	\$ -	\$ 257,898	\$ -	\$ 257,898
2056	\$ 56,946,129	\$ 3,115,898	\$ 3,115,898	\$ -	\$ 239,102	\$ -	\$ 239,102
2057	\$ 59,242,720	\$ 3,100,280	\$ 3,100,280	\$ -	\$ 221,305	\$ -	\$ 221,305
2058	\$ 61,757,719	\$ 3,079,909	\$ 3,079,909	\$ -	\$ 204,513	\$ -	\$ 204,513
2059	\$ 64,514,211	\$ 3,052,912	\$ 3,052,912	\$ -	\$ 188,577	\$ -	\$ 188,577
2060	\$ 67,539,016	\$ 3,019,002	\$ 3,019,002	\$ -	\$ 173,472	\$ -	\$ 173,472
2061	\$ 70,861,289	\$ 2,977,632	\$ 2,977,632	\$ -	\$ 159,158	\$ -	\$ 159,158
2062	\$ 74,512,969	\$ 2,928,334	\$ 2,928,334	\$ -	\$ 145,603	\$ -	\$ 145,603
2063	\$ 78,528,866	\$ 2,871,521	\$ 2,871,521	\$ -	\$ 132,817	\$ -	\$ 132,817
2064	\$ 82,945,942	\$ 2,805,939	\$ 2,805,939	\$ -	\$ 120,729	\$ -	\$ 120,729
2065	\$ 87,805,250	\$ 2,732,730	\$ 2,732,730	\$ -	\$ 109,375	\$ -	\$ 109,375
2066	\$ 93,149,691	\$ 2,653,740	\$ 2,653,740	\$ -	\$ 98,804	\$ -	\$ 98,804
2067	\$ 99,023,416	\$ 2,569,367	\$ 2,569,367	\$ -	\$ 88,988	\$ -	\$ 88,988
2068	\$ 105,473,461	\$ 2,480,509	\$ 2,480,509	\$ -	\$ 79,917	\$ -	\$ 79,917
2069	\$ 112,549,419	\$ 2,388,644	\$ 2,388,644	\$ -	\$ 71,588	\$ -	\$ 71,588
2070	\$ 120,303,070	\$ 2,294,848	\$ 2,294,848	\$ -	\$ 63,979	\$ -	\$ 63,979



Single Discount Rate Development

Present Values of Projected Benefit Payments (Dollars in Thousands) (Concluded)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v ^{((a)-.5)}	(g)=(e)*vf ^{((a)-.5)}	(h)=(c)/(1+sdr) ^{((a)-.5)}
2071	\$ 128,788,941	\$ 2,199,671	\$ 2,199,671	\$ -	\$ 57,047	\$ -	\$ 57,047
2072	\$ 138,065,078	\$ 2,103,412	\$ 2,103,412	\$ -	\$ 50,744	\$ -	\$ 50,744
2073	\$ 148,193,588	\$ 2,006,343	\$ 2,006,343	\$ -	\$ 45,026	\$ -	\$ 45,026
2074	\$ 159,240,990	\$ 1,908,780	\$ 1,908,780	\$ -	\$ 39,848	\$ -	\$ 39,848
2075	\$ 171,278,486	\$ 1,810,924	\$ 1,810,924	\$ -	\$ 35,167	\$ -	\$ 35,167
2076	\$ 184,382,454	\$ 1,712,934	\$ 1,712,934	\$ -	\$ 30,944	\$ -	\$ 30,944
2077	\$ 198,634,887	\$ 1,615,001	\$ 1,615,001	\$ -	\$ 27,139	\$ -	\$ 27,139
2078	\$ 214,123,785	\$ 1,517,347	\$ 1,517,347	\$ -	\$ 23,719	\$ -	\$ 23,719
2079	\$ 230,943,571	\$ 1,420,236	\$ 1,420,236	\$ -	\$ 20,652	\$ -	\$ 20,652
2080	\$ 249,195,540	\$ 1,323,968	\$ 1,323,968	\$ -	\$ 17,909	\$ -	\$ 17,909
2081	\$ 268,988,332	\$ 1,228,881	\$ 1,228,881	\$ -	\$ 15,463	\$ -	\$ 15,463
2082	\$ 290,438,446	\$ 1,135,343	\$ 1,135,343	\$ -	\$ 13,289	\$ -	\$ 13,289
2083	\$ 313,670,805	\$ 1,043,742	\$ 1,043,742	\$ -	\$ 11,365	\$ -	\$ 11,365
2084	\$ 338,819,364	\$ 954,484	\$ 954,484	\$ -	\$ 9,668	\$ -	\$ 9,668
2085	\$ 366,027,772	\$ 867,978	\$ 867,978	\$ -	\$ 8,178	\$ -	\$ 8,178
2086	\$ 395,450,099	\$ 784,625	\$ 784,625	\$ -	\$ 6,877	\$ -	\$ 6,877
2087	\$ 427,251,629	\$ 704,810	\$ 704,810	\$ -	\$ 5,747	\$ -	\$ 5,747
2088	\$ 461,609,717	\$ 628,883	\$ 628,883	\$ -	\$ 4,770	\$ -	\$ 4,770
2089	\$ 498,714,733	\$ 557,156	\$ 557,156	\$ -	\$ 3,931	\$ -	\$ 3,931
2090	\$ 538,771,083	\$ 489,893	\$ 489,893	\$ -	\$ 3,215	\$ -	\$ 3,215
2091	\$ 581,998,312	\$ 427,301	\$ 427,301	\$ -	\$ 2,609	\$ -	\$ 2,609
2092	\$ 628,632,299	\$ 369,532	\$ 369,532	\$ -	\$ 2,099	\$ -	\$ 2,099
2093	\$ 678,926,546	\$ 316,672	\$ 316,672	\$ -	\$ 1,673	\$ -	\$ 1,673
2094	\$ 733,153,567	\$ 268,749	\$ 268,749	\$ -	\$ 1,321	\$ -	\$ 1,321
2095	\$ 791,606,378	\$ 225,731	\$ 225,731	\$ -	\$ 1,032	\$ -	\$ 1,032
2096	\$ 854,600,100	\$ 187,522	\$ 187,522	\$ -	\$ 797	\$ -	\$ 797
2097	\$ 922,473,686	\$ 153,969	\$ 153,969	\$ -	\$ 609	\$ -	\$ 609
2098	\$ 995,591,769	\$ 124,863	\$ 124,863	\$ -	\$ 459	\$ -	\$ 459
2099	\$ 1,074,346,652	\$ 99,941	\$ 99,941	\$ -	\$ 342	\$ -	\$ 342
2100	\$ 1,159,160,440	\$ 78,897	\$ 78,897	\$ -	\$ 251	\$ -	\$ 251
2101	\$ 1,250,487,323	\$ 61,389	\$ 61,389	\$ -	\$ 182	\$ -	\$ 182
2102	\$ 1,348,816,024	\$ 47,048	\$ 47,048	\$ -	\$ 130	\$ -	\$ 130
2103	\$ 1,454,672,421	\$ 35,491	\$ 35,491	\$ -	\$ 91	\$ -	\$ 91
2104	\$ 1,568,622,349	\$ 26,339	\$ 26,339	\$ -	\$ 63	\$ -	\$ 63
2105	\$ 1,691,274,600	\$ 19,220	\$ 19,220	\$ -	\$ 43	\$ -	\$ 43
2106	\$ 1,823,284,138	\$ 13,785	\$ 13,785	\$ -	\$ 28	\$ -	\$ 28
2107	\$ 1,965,355,542	\$ 9,715	\$ 9,715	\$ -	\$ 19	\$ -	\$ 19
2108	\$ 2,118,246,703	\$ 6,729	\$ 6,729	\$ -	\$ 12	\$ -	\$ 12
2109	\$ 2,282,772,785	\$ 4,581	\$ 4,581	\$ -	\$ 8	\$ -	\$ 8
2110	\$ 2,459,810,486	\$ 3,069	\$ 3,069	\$ -	\$ 5	\$ -	\$ 5
2111	\$ 2,650,302,617	\$ 2,025	\$ 2,025	\$ -	\$ 3	\$ -	\$ 3
2112	\$ 2,855,263,026	\$ 1,319	\$ 1,319	\$ -	\$ 2	\$ -	\$ 2
2113	\$ 3,075,781,891	\$ 851	\$ 851	\$ -	\$ 1	\$ -	\$ 1
2114	\$ 3,313,031,423	\$ 545	\$ 545	\$ -	\$ 1	\$ -	\$ 1
2115	\$ 3,568,271,989	\$ 349	\$ 349	\$ -	\$ -	\$ -	\$ -
2116	\$ 3,842,858,715	\$ 224	\$ 224	\$ -	\$ -	\$ -	\$ -
2117	\$ 4,138,248,576	\$ 144	\$ 144	\$ -	\$ -	\$ -	\$ -
2118	\$ 4,456,008,029	\$ 94	\$ 94	\$ -	\$ -	\$ -	\$ -
2119	\$ 4,797,821,222	\$ 62	\$ 62	\$ -	\$ -	\$ -	\$ -
2120	\$ 5,165,498,818	\$ 48	\$ 48	\$ -	\$ -	\$ -	\$ -
Totals					\$ 32,507,634	\$ -	\$ 32,507,634



SECTION H

GLOSSARY OF TERMS

Glossary of Terms

<i>Actuarial Accrued Liability (AAL)</i>	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as “accrued liability” or “actuarial liability.”
<i>Actuarial Assumptions</i>	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
<i>Accrued Service</i>	Service credited under the system which was rendered before the date of the actuarial valuation.
<i>Actuarial Equivalent</i>	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
<i>Actuarial Cost Method</i>	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
<i>Actuarial Gain (Loss)</i>	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
<i>Actuarial Present Value (APV)</i>	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future payments at predetermined rates of interest and probabilities of payment.
<i>Actuarial Valuation</i>	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions.
<i>Actuarial Valuation Date</i>	The date as of which an actuarial valuation is performed.
<i>Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC)</i>	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically, the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

Glossary of Terms

<i>Amortization Payment</i>	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
<i>Amortization Method</i>	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be “open” (meaning, reset each year) or “closed” (the number of years remaining will decline each year).
<i>Cost-of-Living Adjustments</i>	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
<i>Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)</i>	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
<i>Covered-Employee Payroll</i>	The payroll of covered employees, which is typically only the pensionable pay and does not include pay above any pay cap.
<i>Deferred Inflows and Outflows</i>	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
<i>Discount Rate</i>	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: <ol style="list-style-type: none">1. The benefit payments to be made while the pension plans’ fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.

Glossary of Terms

<i>Entry Age Actuarial Cost Method (EAN)</i>	The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit ages(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.
<i>GASB</i>	The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.
<i>Fiduciary Net Position</i>	The fiduciary net position is the value of the assets of the trust.
<i>Long-Term Expected Rate of Return</i>	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
<i>Money-Weighted Rate of Return</i>	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
<i>Multiple-Employer Defined Benefit Pension Plan</i>	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
<i>Municipal Bond Rate</i>	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
<i>Net Pension Liability (NPL)</i>	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
<i>Non-Employer Contribution Entities</i>	Non-employer contribution entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting Statement plan members are not considered non-employer contribution entities.
<i>Normal Cost</i>	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.

Glossary of Terms

<i>Other Postemployment Benefits (OPEB)</i>	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other post-employment benefits do not include termination benefits.
<i>Real Rate of Return</i>	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
<i>Service Cost</i>	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.
<i>Total Pension Expense</i>	<p>The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year:</p> <ol style="list-style-type: none">1. Service Cost2. Interest on the Total Pension Liability3. Current-Period Benefit Changes4. Employee Contributions (made negative for addition here)5. Projected Earnings on Plan Investments (made negative for addition here)6. Pension Plan Administrative Expense7. Other Changes in Plan Fiduciary Net Position8. Recognition of Outflow (Inflow) of Resources due to Liabilities9. Recognition of Outflow (Inflow) of Resources due to Assets
<i>Total Pension Liability (TPL)</i>	The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.
<i>Unfunded Actuarial Accrued Liability (UAAL)</i>	The UAAL is the difference between actuarial accrued liability and valuation assets.
<i>Valuation Assets</i>	The valuation assets are the assets used in determining the unfunded liability of the plan. For purposes of the GASB Statement No. 67, the valuation asset is equal to the market value of assets.

Public Employees Retirement Association of Minnesota

Public Employees Police and Fire Plan

GASB Statements No. 67 and No. 68 Accounting and
Financial Reporting for Pensions

June 30, 2020





November 13, 2020

Public Employees Retirement Association of Minnesota
Public Employees Police and Fire Plan
St. Paul, Minnesota

Dear Trustees of the Public Employees Police and Fire Plan:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 for the Public Employees Police and Fire Plan ("PEFPF"), as amended by Statement No. 82. These calculations have been made on a basis that is consistent with our understanding of these accounting standards.

GASB Statement No. 67 is the accounting standard that applies to the financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust. GASB Statement No. 82 is an amendment to Statements No. 67, No. 68, and No. 73, intended to improve consistency in the application of the accounting standards.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statements No. 67 and No. 68. The Net Pension Liability is not an appropriate measure for measuring the sufficiency of plan assets to cover the estimated cost of settling the employer's benefit obligations. The Net Pension Liability is not an appropriate measure for assessing the need for or amount of future employer contributions. The calculation of the plan's liability for this report may not be applicable for purposes of funding the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statements No. 67 and No. 68 may produce significantly different results. The information in this report is calculated on a total plan basis. PERA is responsible for preparing the Schedule of Employer Allocations and the Schedule of Pension Amounts by Employer. This report may be provided to parties other than the Public Employees Retirement Association (PERA) only in its entirety and only with the permission of PERA. GRS is not responsible for unauthorized use of this report.

This report is based upon information, furnished to us by PERA, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. If your understanding of this information is different, please let us know. This information was checked for internal consistency, but it was not audited.

This report complements the actuarial valuation report for funding purposes that was or will be provided to the Plan and should be considered in conjunction with that report. Please see the actuarial valuation report as of June 30, 2020 for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

To the best of our knowledge, the information contained within this report is accurate and fairly represents the actuarial position of the Public Employees Police and Fire Plan as of the measurement date. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

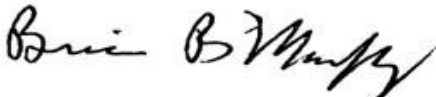
This report does not fully reflect the recent and still developing impact of COVID-19, which is likely to influence demographic and investment experience, at least in the short term. We will continue to monitor these developments and their impact on the plan.

This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

Brian B. Murphy and Bonita J. Wurst are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,



Brian B. Murphy, FSA, EA, FCA, MAAA, PhD



Bonita J. Wurst, ASA, EA, FCA, MAAA



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SECTION A

EXECUTIVE SUMMARY

Executive Summary

as of June 30, 2020 (Dollars in Thousands)

	2020
Actuarial Valuation Date	June 30, 2020
Measurement Date of the Net Pension Liability	June 30, 2020
Employer's Fiscal Year Ending Date (Reporting Date)	Varies by Employer

Membership

Number of	
- Service Retirements	7,793
- Survivors	1,931
- Disability Retirements	1,477
- Deferred Retirements	1,686
- Terminated other non-vested	894
- Active Members	12,025
- Total	25,806
Covered Payroll	\$ 1,069,481

Net Pension Liability

Total Pension Liability	\$ 10,291,567
Plan Fiduciary Net Position	\$ 8,973,460
Net Pension Liability	\$ 1,318,107
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	87.19%
Net Pension Liability as a Percentage of Covered Payroll	123.25%

Development of the Single Discount Rate

Single Discount Rate	7.50%
Long-Term Expected Rate of Investment Return	7.50%
Long-Term Municipal Bond Rate*	2.45%
Last year ending June 30 in the 2021 to 2120 projection period for which projected benefit payments are fully funded	2120

Total Pension Expense/ (Income) **\$ 155,130**

Deferred Outflows and Inflows by Source Arising from Current and Prior Periods to be Recognized in Future

Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	\$ 58,243	\$ 62,595
Changes in assumptions	\$ 441,725	\$ 822,055
Net difference between projected and actual earnings on pension plan investments	\$ 238,850	\$ 198,812
Total	\$ 738,818	\$ 1,083,462

* Source: Based on the 20-Year Municipal GO Index of mixed maturity general obligation municipal bonds as of the weekly rate closest to but not later than the Measurement Date.



Discussion

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans* establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68, *Accounting and Financial Reporting for Pensions* establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements. Governmental Accounting Standards Board (GASB) Statement No. 82, *Pension Issues*, is an amendment to Statements No. 67, No. 68, and No. 73, intended to improve consistency in the application of the accounting standards.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state and local governmental employers to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Paragraph 57 of GASB Statement No. 68 states, "Contributions to the pension plan from the employer subsequent to the measurement date of the collective net pension liability and before the end of the employer's reporting period should be reported as a deferred outflow of resources related to pensions." The information contained in this report does not incorporate any contributions made to PEPFP subsequent to the measurement date of June 30, 2020.

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the liability and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a Statement of Fiduciary Net Position and a Statement of Changes in Fiduciary Net Position in accordance with GASB Statement No. 67. The Statement of Fiduciary Net Position presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The Statement of Changes in Fiduciary Net Position presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Notes to Financial Statements

GASB Statement No. 68 requires the notes to the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

Both GASB Statements No. 67 and No. 68 require the notes to the financial statements for the employers and pension plans to include certain descriptive information about the pension plans through which the pension benefits are provided. The list of disclosure items should include:

- A description of benefits provided by the plan;
- The classes of employees and number of members covered by the pension plan;
- A description of the plan's funding policy, which includes member and employer contribution requirements;
- The pension plan's investment policies;
- The pension plan's fiduciary net position, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- The net pension liability using a discount rate that is 1% higher and 1% lower than the current discount rate used to calculate the total pension liability and net pension liability for financial reporting purposes;
- Significant assumptions and methods used to calculate the total pension liability;
- Inputs to the discount rates; and
- Certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with GASB Statement No. 67. This information includes:

- The composition of the pension plan's Board and the authority under which benefit terms may be amended;
- A description of how fair value is determined;
- Information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets; and
- Annual money-weighted rate of return.

Required Supplementary Information

Statement No. 67 requires a 10-year fiscal history of:

- Sources of changes in the net pension liability;
- Information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- Comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. For employer reporting, the net pension liability and pension expense should be measured as of a date (measurement date) no earlier than the end of the employer's prior fiscal year, consistently applied from period to period. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2020 and a measurement date of June 30, 2020.

Measurement of the Net Pension Liability

The net pension liability is to be measured as the total pension liability, less the amount of the pension plan's fiduciary net position. In actuarial terms, this will be the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 7.50%), then the following outcomes are expected:

1. The normal cost of the plan is expected to remain approximately level as a percent of pay,
2. The funded status of the plan is expected to gradually improve and is expected to be 100% funded within the next 28 years, and
3. The unfunded liability will grow initially as a dollar amount before beginning to decline.

The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the market value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

- (1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations, in other words, of transferring the obligations to an unrelated third party in an arm's length market value type transaction.
- (2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
- (3) The measurement would produce a different result if the actuarial value of assets were used instead of the market value of assets.

Limitation of Project Scope

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a single discount rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the long-term expected rate of return on pension plan investments is 7.50%; the municipal bond rate is 2.45% (based on the weekly rate closest to but not later than the measurement date of the Fidelity "20-Year Municipal GO AA Index") and the resulting single discount rate is 7.50%.

SECTION B

FINANCIAL STATEMENTS

Statement of Pension Expense under GASB Statement No. 68

Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

A. Expense

1. Service Cost	\$	217,127
2. Interest on the Total Pension Liability	\$	729,945
3. Current-Period Benefit Changes	\$	-
4. Employee Contributions (made negative for addition here)	\$	(123,525)
5. Projected Earnings on Plan Investments (made negative for addition here)	\$	(654,340)
6. Pension Plan Administrative Expense	\$	924
7. Other Changes in Plan Fiduciary Net Position	\$	(260)
8. Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability <i>Arising from Current Reporting Period</i>	\$	5,058
9. Recognition of Outflow (Inflow) of Resources due to assumption changes <i>Arising from Current Reporting Period</i>	\$	(4,131)
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected (7.50%) and actual earnings on Pension Plan Investments <i>Arising from Current Reporting Period</i>	\$	57,078
11. Increase/(Decrease) from Experience in the Current Reporting Period	\$	227,876
12. Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability <i>Arising from Prior Reporting Periods</i>	\$	(87,198)
13. Recognition of Outflow (Inflow) of Resources due to assumption changes <i>Arising from Prior Reporting Periods</i>	\$	47,907
14. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on Pension Plan Investments <i>Arising from Prior Reporting Periods</i>	\$	(33,455)
15. Total Pension Expense / (Income)	\$	155,130

Recognition of Deferred Outflows and Inflows of Resources

Differences between expected and actual experience and changes in assumptions are recognized in pension expense using a systematic and rational method over a closed period equal to the average of the expected remaining service lives of all employees that are provided with pension through the pension plan (active employees and inactive employees) determined as of the beginning of the measurement period.

At the beginning of the current measurement period, the expected remaining service lives of all active employees in the plan was approximately 153,560 years. Additionally, the total plan membership (active employees and inactive employees) was 25,559. As a result, the average of the expected remaining service lives for purposes of recognizing the applicable deferred outflows and inflows of resources established in the current measurement period is 6.00 years.

Additionally, differences between projected and actual earnings on plan investments should be recognized in pension expense using a systematic and rational method over a closed five-year period. For this purpose, the deferred outflows and inflows of resources are recognized in the pension expense as a level dollar amount over the closed period identified above.



Statement of Outflows and Inflows Arising from Current Reporting Period Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

A. Outflows (Inflows) of Resources due to Liabilities

1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	\$	30,348
2. Assumption Changes (gains) or losses	\$	(24,785)
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		6.0000
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability	\$	5,058
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	\$	<u>(4,131)</u>
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities		927
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	\$	25,290
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	\$	<u>(20,654)</u>
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities		4,636

B. Outflows (Inflows) of Resources due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses		285,391
2. Recognition period for Assets {in years}		5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets		57,078
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets		228,313

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

A. Outflows and Inflows of Resources due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	\$ 459,033	\$ 497,397	\$ (38,364)
2. Due to Assets	176,581	152,958	23,623
3. Total	\$ 635,614	\$ 650,355	\$ (14,741)

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	\$ 17,308	\$ 99,448	\$ (82,140)
2. Assumption Changes	441,725	397,949	43,776
3. Net Difference between projected and actual earnings on pension plan investments	176,581	152,958	23,623
4. Total	\$ 635,614	\$ 650,355	\$ (14,741)

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	\$ 58,243	\$ 62,595	\$ (4,352)
2. Assumption Changes	441,725	822,055	(380,330)
3. Net Difference between projected and actual earnings on pension plan investments	238,850	198,812	40,038
4. Total	\$ 738,818	\$ 1,083,462	\$ (344,644)

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources
2021	\$ (93,877)
2022	(365,902)
2023	57,102
2024	57,105
2025	928
Thereafter	0
Total	\$ (344,644)

Recognition of Deferred Outflows and Inflows of Resources Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

Year Established	Initial Amount	Initial Recognition Period	Current Year Recognition	Remaining Recognition	Remaining Recognition Period
Deferred Outflow (Inflow) Due to Differences Between Expected and Actual Experience on Liabilities					
2015	\$ (221,112)	6.0000	\$ (36,852)	\$ 0	0.0000
2016	(375,575)	6.0000	(62,596)	(62,595)	1.0000
2017	37,292	6.0000	6,215	12,432	2.0000
2018	21,720	6.0000	3,620	10,860	3.0000
2019	14,491	6.0000	2,415	9,661	4.0000
2020	30,348	6.0000	5,058	25,290	5.0000
Total			\$ (82,140)	\$ (4,352)	
Deferred Outflow (Inflow) Due to Assumption Changes					
2016	\$ 2,650,350	6.0000	\$ 441,725	\$ 441,725	1.0000
2017	(2,300,201)	6.0000	(383,367)	(766,733)	2.0000
2018	(42,807)	6.0000	(7,135)	(21,402)	3.0000
2019	(19,898)	6.0000	(3,316)	(13,266)	4.0000
2020	(24,785)	6.0000	(4,131)	(20,654)	5.0000
Total			\$ 43,776	\$ (380,330)	
Deferred Outflow (Inflow) Due to Differences Between Projected and Actual Earnings on Plan Investments					
2016	\$ 579,951	5.0000	\$ 115,991	\$ 0	0.0000
2017	(535,516)	5.0000	(107,103)	(107,104)	1.0000
2018	(229,273)	5.0000	(45,855)	(91,708)	2.0000
2019	17,561	5.0000	3,512	10,537	3.0000
2020	285,391	5.0000	57,078	228,313	4.0000
Total			\$ 23,623	\$ 40,038	
Deferred Outflow (Inflow) due to All Sources					
Total			\$ (14,741)	\$ (344,644)	

Statement of Fiduciary Net Position (Dollars in Thousands)

Assets in Trust	Market Value	
	June 30, 2020	June 30, 2019
Cash, Equivalents, Short Term Securities	\$ 389,655	\$ 246,498
Fixed Income	\$ 1,826,327	\$ 1,798,789
Equity	\$ 5,347,942	\$ 5,499,553
SBI Alternative	\$ 1,402,246	\$ 1,286,444
Other	\$ -	\$ -
Total Assets in Trust	\$ 8,966,170	\$ 8,831,284
Assets Receivable	\$ 13,148 *	\$ 19,164 *
Amounts Payable	\$ 5,858	\$ (5,896)
Net Position Restricted for Pensions	\$ 8,973,460	\$ 8,844,552

* Includes \$7.679 million contribution receivable from Minneapolis to be paid July 15.

Statement of Changes in Fiduciary Net Position (Dollars in Thousands)

Change in Assets	Market Value	
Year Ending	June 30, 2020	June 30, 2019
1. Fund balance at market value at beginning of year	\$ 8,844,552	\$ 8,486,907
2. Contributions		
a. Member	\$ 123,525	\$ 111,762
b. Employer	\$ 193,819 *	\$ 174,817 *
c. Other sources	\$ 13,500	\$ 13,500
d. Total contributions	\$ 330,844	\$ 300,079
3. Investment income		
a. Investment income/(loss)	\$ 377,183	\$ 617,935
b. Investment expenses	\$ (8,234)	\$ (8,423)
c. Net subtotal	\$ 368,949	\$ 609,512
4. Other	\$ 260	\$ 54
5. Total additions: (2.d.) + (3.c.) + (4.)	\$ 700,053	\$ 909,645
6. Benefits Paid		
a. Annuity benefits	\$ (567,040)	\$ (547,699)
b. Refunds	\$ (3,181)	\$ (3,283)
c. Total benefits paid	\$ (570,221)	\$ (550,982)
7. Expenses		
a. Other	\$ -	\$ -
b. Administrative	\$ (924)	\$ (1,018)
c. Total expenses	\$ (924)	\$ (1,018)
8. Total deductions: (6.c.) + (7.c.)	\$ (571,145)	\$ (552,000)
9. Net increase (decrease) in net position: (5) + (8)	\$ 128,908	\$ 357,645
10. Net position restricted for pensions	\$ 8,973,460	\$ 8,844,552
11. Approximate return on market value of assets	4.2%	7.3%

* Includes \$7.679 million contribution receivable from Minneapolis to be paid July 15.

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios

Current Period

Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

A. Total pension liability	
1. Service cost	\$ 217,127
2. Interest on the total pension liability	\$ 729,945
3. Changes of benefit terms	\$ -
4. Difference between expected and actual experience of the total pension liability	\$ 30,348
5. Changes of assumptions	\$ (24,785)
6. Benefit payments, including refunds of employee contributions	\$ (570,221)
7. Net change in total pension liability	\$ 382,414
8. Total pension liability – beginning	\$ 9,909,153
9. Total pension liability – ending	<u>\$ 10,291,567</u>
B. Plan fiduciary net position	
1. Contributions – employer	\$ 207,319
2. Contributions – employee	\$ 123,525
3. Net investment income	\$ 368,949
4. Benefit payments, including refunds of employee contributions	\$ (570,221)
5. Pension Plan Administrative Expense	\$ (924)
6. Other	\$ 260
7. Net change in plan fiduciary net position	\$ 128,908
8. Plan fiduciary net position – beginning	\$ 8,844,552
9. Plan fiduciary net position – ending	<u>\$ 8,973,460</u>
C. Net pension liability	<u>\$ 1,318,107</u>
D. Plan fiduciary net position as a percentage of the total pension liability	87.19%
E. Covered-employee payroll*	\$ 1,069,481
F. Net pension liability as a percentage of covered-employee payroll	123.25%

*Assumed equal to actual member contributions divided by employee contribution rate.

Schedules of Required Supplementary Information

Schedule of Changes in Net Pension Liability and Related Ratios Multiyear (Dollars in Thousands)

Last 10 Fiscal Years (which may be built prospectively)

Fiscal year ending June 30,	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Total Pension Liability										
Service Cost	\$ 217,127	\$ 209,098	\$ 203,131	\$ 318,401	\$ 194,352	\$ 187,959	\$ 169,124			
Interest on the Total Pension Liability	\$ 729,945	\$ 703,640	\$ 682,903	\$ 616,740	\$ 658,198	\$ 648,233	\$ 598,165			
Benefit Changes	\$ -	\$ -	\$ (50,771)	\$ -	\$ -	\$ -	\$ -			
Difference between Expected and Actual Experience	\$ 30,348	\$ 14,491	\$ 21,720	\$ 37,292	\$ (375,575)	\$ (221,112)	\$ 1,813			
Assumption Changes	\$ (24,785)	\$ (19,898)	\$ (42,807)	\$ (2,300,201)	\$ 2,650,350	\$ -	\$ 323,945			
Benefit Payments	\$ (567,040)	\$ (547,699)	\$ (528,468)	\$ (512,379)	\$ (498,608)	\$ (481,330)	\$ (452,462)			
Refunds	\$ (3,181)	\$ (3,283)	\$ (1,902)	\$ (2,119)	\$ (2,391)	\$ (1,953)	\$ (1,633)			
Net Change in Total Pension Liability	\$ 382,414	\$ 356,349	\$ 283,806	\$ (1,842,266)	\$ 2,626,326	\$ 131,797	\$ 638,952			
Total Pension Liability - Beginning	\$ 9,909,153	\$ 9,552,804	\$ 9,268,998	\$ 11,111,264	\$ 8,484,938	\$ 8,353,141	\$ 7,714,189			
Total Pension Liability - Ending (a)	\$ 10,291,567	\$ 9,909,153	\$ 9,552,804	\$ 9,268,998	\$ 11,111,264	\$ 8,484,938	\$ 8,353,141			
Plan Fiduciary Net Position										
Employer Contributions	\$ 207,319	\$ 188,317	\$ 179,781	\$ 175,329	\$ 165,065	\$ 153,317	\$ 141,632			
Employee Contributions	\$ 123,525	\$ 111,762	\$ 105,479	\$ 101,984	\$ 95,172	\$ 88,733	\$ 81,213			
Pension Plan Net Investment Income	\$ 368,949	\$ 609,512	\$ 813,966	\$ 1,058,942	\$ (8,949)	\$ 317,556	\$ 1,158,389			
Benefit Payments	\$ (567,040)	\$ (547,699)	\$ (528,468)	\$ (512,379)	\$ (498,608)	\$ (481,330)	\$ (452,462)			
Refunds	\$ (3,181)	\$ (3,283)	\$ (1,902)	\$ (2,119)	\$ (2,391)	\$ (1,953)	\$ (1,633)			
Pension Plan Administrative Expense	\$ (924)	\$ (1,018)	\$ (886)	\$ (992)	\$ (906)	\$ (803)	\$ (798)			
Other	\$ 260	\$ 54	\$ 58	\$ 24	\$ 3	\$ 84	\$ 18			
Net Change in Plan Fiduciary Net Position	\$ 128,908	\$ 357,645	\$ 568,028	\$ 820,789	\$ (250,614)	\$ 75,604	\$ 926,359			
Plan Fiduciary Net Position - Beginning	\$ 8,844,552	\$ 8,486,907	\$ 7,918,879	\$ 7,098,090	\$ 7,348,704	\$ 7,273,100	\$ 6,346,741			
Plan Fiduciary Net Position - Ending (b)	\$ 8,973,460	\$ 8,844,552	\$ 8,486,907	\$ 7,918,879	\$ 7,098,090	\$ 7,348,704	\$ 7,273,100			
Net Pension Liability - Ending (a) - (b)	\$ 1,318,107	\$ 1,064,601	\$ 1,065,897	\$ 1,350,119	\$ 4,013,174	\$ 1,136,234	\$ 1,080,041			
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	87.19 %	89.26 %	88.84 %	85.43 %	63.88 %	86.61 %	87.07 %			
Covered Employee Payroll	\$ 1,069,481	\$ 1,011,421	\$ 976,657	\$ 944,296	\$ 881,222	\$ 845,076	\$ 820,333			
Net Pension Liability as a Percentage of Covered Employee Payroll	123.25 %	105.26 %	109.14 %	142.98 %	455.41 %	134.45 %	131.66 %			
Notes to Schedule:										
N/A										



Schedules of Required Supplementary Information

Schedule of the Net Pension Liability Multiyear (Dollars in Thousands)

Last 10 Fiscal Years (which may be built prospectively)

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll	Net Pension Liability as a % of Covered Payroll
2011						
2012						
2013						
2014	\$ 8,353,141	\$ 7,273,100	\$ 1,080,041	87.07%	\$ 820,333	131.66%
2015	\$ 8,484,938	\$ 7,348,704	\$ 1,136,234	86.61%	\$ 845,076	134.45%
2016	\$ 11,111,264	\$ 7,098,090	\$ 4,013,174	63.88%	\$ 881,222	455.41%
2017	\$ 9,268,998	\$ 7,918,879	\$ 1,350,119	85.43%	\$ 944,296	142.98%
2018	\$ 9,552,804	\$ 8,486,907	\$ 1,065,897	88.84%	\$ 976,657	109.14%
2019	\$ 9,909,153	\$ 8,844,552	\$ 1,064,601	89.26%	\$ 1,011,421	105.26%
2020	\$ 10,291,567	\$ 8,973,460	\$ 1,318,107	87.19%	\$ 1,069,481	123.25%

Schedule of Contributions Multiyear (Dollars in Thousands)

Last 10 Fiscal Years

FY Ending June 30,	Actuarially Determined Contribution	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll	Actual Contribution as a % of Covered Payroll
2011	\$ 124,284	\$ 109,604	\$ 14,680	\$ 775,806	14.13%
2012	\$ 152,369	\$ 121,891	\$ 30,478	\$ 794,417	15.34
2013	\$ 189,254	\$ 125,995	\$ 63,259	\$ 796,188	15.82
2014	\$ 163,985	\$ 141,632	\$ 22,353	\$ 820,333	17.27
2015	\$ 197,325	\$ 153,317	\$ 44,008	\$ 845,076	18.14
2016	\$ 189,375	\$ 165,065	\$ 24,310	\$ 881,222	18.73
2017	\$ 165,252	\$ 175,329	\$ (10,077)	\$ 944,296	18.57
2018	\$ 193,183	\$ 179,781	\$ 13,402	\$ 976,657	18.41
2019	\$ 173,459	\$ 188,317	\$ (14,858)	\$ 1,011,421	18.62
2020	\$ 177,855	\$ 207,319	\$ (29,464)	\$ 1,069,481	19.39

Notes to Schedule of Contributions

Methods and Assumptions Used to Determine Contribution Rates for Fiscal Year Ending June 30, 2020:

Valuation Date	June 30, 2019
Notes	Actuarially determined contribution rates are calculated as of each June 30 and apply to the fiscal year beginning on the day after the measurement date.
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	29 years
Asset Valuation Method	5-Year smoothed market; no corridor
Inflation	2.50%
Payroll Growth	3.25%
Salary Increases	3.25% to 12.25% including inflation
Investment Rate of Return	7.50%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2017 valuation pursuant to an experience study of the period 2011 - 2015.
Mortality	RP-2014 annuitant generational mortality table projected with mortality improvement scale MP-2018, from a base year of 2006. Male rates adjusted by a factor of 0.96.

Other Information:

Notes	The plan is assumed to pay a 1.00% post retirement benefit increase for all future years. See separate funding report as of July 1, 2019 for additional detail.
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Schedule of Investment Returns Multiyear Last 10 Fiscal Years

<u>FY Ending June 30,</u>	<u>Annual Return¹</u>
2011	
2012	
2013	
2014	
2015	
2016	
2017	
2018	
2019	
2020	

¹ Annual money-weighted rate of return, net of investment expenses.

It is our understanding that this exhibit will be prepared by PERA with assistance from the State Board of Investment. Please provide a copy of the final exhibit for our files.

SECTION D

ADDITIONAL FINANCIAL STATEMENT DISCLOSURES

Asset Allocation

Long-Term Expected Return on Plan Assets

The long-term expected rate of return on pension plan investments was determined using a building-block method. Estimates for expected future real rates of return (expected returns, net of inflation) were developed for each asset class using both long-term historical returns and long-term capital market expectation from a number of investment management and consulting organizations. The asset class estimates and the target allocations were then combined to produce a geometric, long-term expected rate of return for the portfolio. Inflation expectations were applied to derive the nominal rate of return for the portfolio. For each major asset class that is included in the pension fund's target asset allocation as of June 30, 2020, these estimates are summarized in the following table:

<u>Asset Class</u>	<u>Target Allocation</u>	<u>Long-Term Expected Real Rate of Return (geometric)</u>
Domestic Equity	36%	5.10%
International Equity	17%	5.30%
Private Markets	25%	5.90%
Fixed Income	20%	0.75%
Unallocated Cash	2%	0.00%
Total	<u>100%</u>	

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to PERA for GASB compliance purposes. PERA furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

For purposes of this valuation, the long-term expected rate of return assumption is 7.50%. This assumption is based on reviews of inflation and investment return assumptions in our experience study report for the General Employees Retirement Plan dated June 27, 2019.

Single Discount Rate

A single discount rate of 7.50% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 7.50% and the municipal bond rate of 2.45%. The projection of cash flows used to determine this single discount rate assumed that plan member and employer contributions will be made at the current statutory rates. Based on these assumptions, the pension plan's fiduciary net position and future contributions were sufficient to finance all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Regarding the sensitivity of the net pension liability to changes in the single discount rate, the following presents the plan's net pension liability, calculated using a single discount rate of 7.50%, as well as what the plan's net pension liability would be if it were calculated using a single discount rate that is 1-percentage-point lower or 1-percentage-point higher:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

(Dollars in Thousands)

	1% Decrease	Current Single Discount	1% Increase
	6.50%	Rate Assumption	8.50%
		7.50%	
Total Pension Liability	\$ 11,600,637	\$ 10,291,567	\$ 9,208,541
Net Position Restricted for Pensions	\$ 8,973,460	\$ 8,973,460	\$ 8,973,460
Net Pension Liability	\$ 2,627,177	\$ 1,318,107	\$ 235,081

Note that we believe the 8.5% interest rate assumption would not comply with Actuarial Standards of Practice.

GASB Statement No. 68 Reconciliation (Dollars in Thousands)

Current Reporting Period

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Current Period		Pension Expense*
				Deferred Outflows	Deferred Inflows	
Balance Beginning of Year	\$ 9,909,153	\$ 8,844,552	\$ 1,064,601			
Changes for the Year:						
Service Cost	\$ 217,127		\$ 217,127			\$ 217,127
Interest on Total Pension Liability	\$ 729,945		\$ 729,945			\$ 729,945
Interest on Fiduciary Net Position		\$ 654,340	\$ (654,340)			\$ (654,340)
Changes in Benefit Terms	\$ -		\$ -			\$ -
Liability Experience Gains and Losses	\$ 30,348		\$ 30,348	\$ 25,290	\$ -	\$ 5,058
Changes in Assumptions	\$ (24,785)		\$ (24,785)	\$ -	\$ 20,654	\$ (4,131)
Contributions - Employer		\$ 207,319	\$ (207,319)			
Contributions - Employees		\$ 123,525	\$ (123,525)			\$ (123,525)
Asset Gain/(Loss)		\$ (285,391)	\$ 285,391	\$ 228,313	\$ -	\$ 57,078
Benefit Payouts	\$ (570,221)	\$ (570,221)				
Administrative Expenses		\$ (924)	\$ 924			\$ 924
Other		\$ 260	\$ (260)			\$ (260)
Net Changes	\$ 382,414	\$ 128,908	\$ 253,506	\$ 253,603	\$ 20,654	\$ 227,876
Balance End of Year	\$ 10,291,567	\$ 8,973,460	\$ 1,318,107			

* Pension Expense from Experience in the Current Reporting Period.

GASB Statement No. 68 Reconciliation (Dollars in Thousands)

Current and Prior Reporting Periods

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Deferred Outflows	Deferred Inflows	Net Deferred Outflows Prior Year	Total Pension Expense*
Balance Beginning of Year	\$ 9,909,153	\$ 8,844,552	\$ 1,064,601				
Changes for the Year:							
Service Cost	\$ 217,127		\$ 217,127				\$ 217,127
Interest on Total Pension Liability	\$ 729,945		\$ 729,945				\$ 729,945
Interest on Fiduciary Net Position		\$ 654,340	\$ (654,340)				\$ (654,340)
Changes in Benefit Terms	\$ -		\$ -				\$ -
Liability Experience Gains and Losses	\$ 30,348		\$ 30,348	\$ 58,243	\$ 62,595	\$ (116,840)	\$ (82,140)
Changes in Assumptions	\$ (24,785)		\$ (24,785)	\$ 441,725	\$ 822,055	\$ (311,769)	\$ 43,776
Contributions - Employer		\$ 207,319	\$ (207,319)				
Contributions - Employees		\$ 123,525	\$ (123,525)				\$ (123,525)
Asset Gain/(Loss)		\$ (285,391)	\$ 285,391	\$ 238,850	\$ 198,812	\$ (221,730)	\$ 23,623
Benefit Payouts	\$ (570,221)	\$ (570,221)					
Administrative Expenses		\$ (924)	\$ 924				\$ 924
Other		\$ 260	\$ (260)				\$ (260)
Net Changes	\$ 382,414	\$ 128,908	\$ 253,506				\$ 155,130
Balance End of Year	\$ 10,291,567	\$ 8,973,460	\$ 1,318,107	\$ 738,818	\$ 1,083,462	\$ (650,339)	

* Pension Expense from Experience in the Current and Prior Reporting Period.

Summary of Population Statistics

	Terminated			Recipients			Total
	Actives	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	
Members on 7/1/2019	11,763	1,620	1,145	7,718	1,413	1,900	25,559
New members	782						782
Return to active	61	(28)	(32)	0	(1)	0	0
Terminated non-vested	(80)	0	80	0	0	0	0
Service retirements	(178)	(84)	0	262	0	0	0
Terminated deferred	(189)	189	0	0	0	0	0
Terminated refund/transfer	(40)	(24)	(190)	0	0	0	(254)
Deaths	(10)	(4)	(4)	(188)	(36)	(106)	(348)
New beneficiary	0	0	0	0	0	143	143
Disabled	(84)	0	0	0	84	0	0
Data adjustments	0	17	(105)	1	17	(6)	(76)
Net change	262	66	(251)	75	64	31	247
Members on 6/30/2020	12,025	1,686	894	7,793	1,477	1,931	25,806

SECTION E

SUMMARY OF BENEFITS

Summary of Plan Provisions – Police & Fire Plan

Following is a summary of the major plan provisions used in the valuation of this report. PERA is solely responsible for the validity, accuracy and comprehensiveness of this information. If any of the plan provisions shown below are not accurate and complete, the valuation results may differ significantly from those shown in this report and may require a revision of this report.

Plan year	July 1 through June 30.																
Eligibility	All full-time and certain part-time police officers and fire fighters, and certain paramedics, who are not contributing to any other local retirement fund.																
Contributions	<table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;"><u>Effective as of</u></th> <th style="text-align: center;"><u>Member</u></th> <th style="text-align: center;"><u>Employer</u></th> <th style="text-align: center;"><u>Total</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Prior to January 1, 2019</td> <td style="text-align: center;">10.80%</td> <td style="text-align: center;">16.20%</td> <td style="text-align: center;">27.00%</td> </tr> <tr> <td style="text-align: center;">January 1, 2019</td> <td style="text-align: center;">11.30%</td> <td style="text-align: center;">16.95%</td> <td style="text-align: center;">28.25%</td> </tr> <tr> <td style="text-align: center;">January 1, 2020 and later</td> <td style="text-align: center;">11.80%</td> <td style="text-align: center;">17.70%</td> <td style="text-align: center;">29.50%</td> </tr> </tbody> </table> <p style="margin-left: 40px;">Member contributions are “picked up” according to the provisions of Internal Revenue Code 414(h).</p>	<u>Effective as of</u>	<u>Member</u>	<u>Employer</u>	<u>Total</u>	Prior to January 1, 2019	10.80%	16.20%	27.00%	January 1, 2019	11.30%	16.95%	28.25%	January 1, 2020 and later	11.80%	17.70%	29.50%
<u>Effective as of</u>	<u>Member</u>	<u>Employer</u>	<u>Total</u>														
Prior to January 1, 2019	10.80%	16.20%	27.00%														
January 1, 2019	11.30%	16.95%	28.25%														
January 1, 2020 and later	11.80%	17.70%	29.50%														
State contributions	<p>\$9 million paid annually on October 1 until both PERA P&F and MSRS State Patrol become 90% funded (on an actuarial value of assets basis), or July 1, 2048, if earlier.</p> <p>In addition, \$4.5 million in fiscal years 2019 and 2020, and \$9.0 million thereafter, until the plan reaches 100% funding on an actuarial value of assets basis, or July 1, 2048, if earlier.</p>																
Allowable service	Police and Fire service during which member contributions were made. May also include certain leaves of absence and military service.																
Salary	Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes unused annual leaves and sick leave payments, severance payments, Workers’ Compensation benefits and employer-paid flexible spending accounts, cafeteria plans, healthcare expense accounts, day-care expenses, fringe benefits and the cost of insurance coverage.																
Average salary	Average of the five highest successive years of salary. Average Salary is based on all Allowable Service if less than five years.																

Summary of Plan Provisions – Police & Fire Plan (Continued)

Vesting	Vesting Percent if First Hired			
	Years of Service	Before 7/1/2010	After 6/30/2010 & before 7/1/2014	After 6/30/2014
	<3	0%	0%	0%
	3 – 4	100	0	0
	5	100	50	0
	6	100	60	0
	7	100	70	0
	8	100	80	0
	9	100	90	0
	10	100	100	50
	11	100	100	55
	12	100	100	60
	13	100	100	65
	14	100	100	70
	15	100	100	75
	16	100	100	80
	17	100	100	85
	18	100	100	90
	19	100	100	95
	20+	100	100	100

Summary of Plan Provisions – Police & Fire Plan (Continued)

Retirement

Normal retirement benefit

Age/service requirement Age 55 and at least partially vested. Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service.

Amount 3.00% of Average Salary for each year of Allowable Service (up to 33 years if hired after June 30, 2014), pro-rata for completed months, adjusted for partial vesting if applicable. A pro-rata share of member contributions will be refunded at retirement for excess service.

Early retirement

Age/service requirement Age 50 and at least partially vested.

Amount Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date and 0.10% (0.20% for members enrolled in the plan after June 30, 2007) reduction for each month the member is under age 55. If the effective date of retirement is after June 30, 2019, the reduction is 5/12% for each month that the member is under age 55 at the time of retirement. The change in early retirement factors will be phased in over a five-year period for retirements occurring between July 1, 2014 and June 30, 2019.

Form of payment Life annuity with return on death of any balance of contributions over aggregate monthly payments. Actuarially equivalent options are:

25%, 50%, 75% or 100% Joint and Survivor with bounce back feature. The Joint and Survivor options are determined on an actuarially equivalent basis, but with no actuarial reduction for the bounce back feature.

Benefit Increases Benefit recipients receive 1.00% increases each year in January. A benefit recipient who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Members receiving benefits for at least one month but less than 12 full months as of June 30 will receive a pro rata increase. For retirements after May 31, 2014, the first increase will be delayed two years.

Members retired under laws in effect before July 1, 1973 receive an additional lump sum payment each year. In 1989, this lump sum payment is the greater of \$25 times each full year of Allowable Service or the difference between \$400 times each full year of Allowable Service and the sum of benefits paid from any Minnesota public pension plan plus cash payments from the Social Security Administration for the preceding fiscal year July 1, 1988 through June 30, 1989. In each following year, the lump sum payment will increase by the same percentage increase that is applied to regular annuities paid from the Fund. Effective January 1, 2002, annual lump sum payment is divided by 12 and paid as a monthly life annuity in the annuity form elected.

Summary of Plan Provisions – Police & Fire Plan (Continued)

Disability

Duty disability benefit

Age/service requirement Physically or mentally unable to perform normal duties as a police officer or fire fighter as a direct result of an act of duty specific to protecting property and personal safety of others. Members age 55 or older with 20 or more years of Allowable Service are not eligible to apply for duty disability benefits.

Amount 60.0%, plus an additional 3.00% for each year of service in excess of 20 years, of Average Salary paid until Normal Retirement Age, or for 60 months, whichever is later. The retirement benefit is then recalculated but is never lower than the disability benefit.

If a member became disabled prior to July 1, 1997 but did not commence their benefit before July 1, 1997, the benefit is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in post-retirement interest rates from 5.00% to 6.00%.

Regular disability benefit

Age/service requirement Physically or mentally unable to perform normal duties as a police officer or fire fighter with one year of Allowable Service. Members age 55 or older with 15 or more years of Allowable Service are not eligible to apply for regular disability benefits.

Amount 45.00% of Average Salary, paid until Normal Retirement Age, or for 60 months, whichever is later. The retirement benefit is then recalculated but is never lower than the disability benefit. Benefits for total and permanent regular disability are calculated as 3.00% of Average Salary for each year of Allowable Service, with a minimum of 45.00% of Average Salary.

If a member became disabled prior to July 1, 1997 but did not commence his or her benefit before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in post-retirement interest rates from 5.00% to 6.00%.

Benefit increases Same as for retirement.

Retirement benefit

Age/service requirement Upon cessation of disability benefits.

Amount Any optional annuity continues. Otherwise, the larger of the disability benefit paid before age 55 or the normal retirement benefit available at age 55, or an actuarially equivalent optional annuity.

Form of payment Same as for retirement.

Benefit increases Same as for retirement.

Summary of Plan Provisions – Police & Fire Plan (Continued)

Death

Surviving spouse benefit

Age/service requirement	Death of active member or regular disabled member with surviving spouse whose disability benefit accrued before July 1, 2007, who is vested at death (service requirement is waived if death occurs in the line of duty).
Amount	50.00% of salary (60.00% if death occurs in the line of duty after June 30, 2007) averaged over last six months. Benefit paid until spouse's death but no payments while spouse is remarried prior to July 1, 1991. If a member died prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefits before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.
Benefit increases	Same as for retirement.

Surviving dependent children's benefit

Age/service requirement	Non-duty related death of active member or regular disabled member with eligible dependent child.
Amount	10.00% of salary averaged over last six months for each child. Family benefit minimum (including spouse's benefit) of 50.00% of salary and maximum of 70.00% of salary. Benefits paid until child marries, dies, or attains age 18 (age 23 if full-time student).

Duty disability surviving spouse benefit

Age/service requirement	Member who is totally and permanently disabled who dies before age 55 or within five years of the effective date of the disability benefit, whichever is later.
Amount	60.00% of salary averaged over last six months. Benefits paid until spouse's death but no payments while spouse is remarried prior to July 1, 1991.
Benefit increases	Same as for retirement.

Summary of Plan Provisions – Police & Fire Plan (Continued)

Death (Concluded)

Duty disability surviving dependent children's benefit

Age/service requirement Death of a member with an eligible dependent child who was disabled in the line of duty and died as a direct result of the disability.

Amount 10.00% of salary averaged over last six months for each child. Family benefit minimum (including spouse's benefit) of 60.00% of salary and maximum of 80.00% of salary. Benefits paid until child marries, dies, or attains age 18 (age 23 if full-time student).

If a member died prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefits before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.

Surviving spouse optional annuity

Age/service requirement Active member dies before age 55. Benefits commence when member would have been age 55 or as early as age 50 if qualified for early retirement, benefits commence immediately if member had 30 years of service.

Amount Survivor's payment of the 100% joint and survivor benefit the member could have elected if terminated. Alternatively, spouse may elect refund of deceased's contributions with interest if there are no dependent children.

If a member died prior to July 1, 1997 and the beneficiary was not eligible to commence their survivor benefits before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997, and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.

Benefit increases Same as for retirement.

Summary of Plan Provisions – Police & Fire Plan (Continued)

Termination	
<u>Refund of contributions</u>	
Age/service requirement	Termination of public service.
Amount	Member's contributions with 6.00% interest through June 30, 2011. Beginning July 1, 2011, a member's contributions increase at 4.00% interest. Beginning July 1, 2018, a member's contributions increase at 3.00% interest. If a member is vested, a deferred annuity may be elected in lieu of a refund.
<u>Deferred benefit</u>	Partially or fully vested.
Age/service requirement	
Amount	Benefit computed under law in effect at termination and increased by the following percentage (augmentation) compounded annually for terminations prior to 2012: <ul style="list-style-type: none"> (a.) 0.00% before July 1, 1971; (b.) 5.00% from July 1, 1971 to January 1, 1981; (c.) 3.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of January 1 of the year following attainment of age 55 and January 1, 2012; (d.) 5.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of the date the annuity begins and January 1, 2012; (e.) 1.00% from January 1, 2012 through December 31, 2018; and (f.) 0.00% from January 1, 2019, thereafter. <p>Members who terminate after 2011 will receive no future augmentation.</p> <p>If a member terminated employment prior to July 1, 1997 but was not eligible to commence their pension before July 1, 1997, the benefit payable is calculated under the laws in effect before July 1, 1997 and an actuarial increase shall be made for the change in the post-retirement interest rates from 5.00% to 6.00%.</p> <p>Same as for retirement.</p>
Form of payment	
Actuarial equivalent factors	Effective July 1, 2019, actuarially equivalent factors based on the RP-2014 mortality table for healthy annuitants for a member turning age 55 in 2021, reflecting projected mortality improvements using Scale MP-2017, male rates multiplied by 0.96, blended 90% males, and 6.50% interest.

Summary of Plan Provisions – Police & Fire Plan (Concluded)

Combined service annuity	<p>Members are eligible for combined service benefits if they:</p> <ul style="list-style-type: none">(a.) Meet minimum retirement age for each plan participated in and total public service meets the vesting requirements of each plan; or(b.) Have three or more years of service under PERA and the covered fund(s) (if hired prior to July 1, 2010). <p>Other requirements for combined service include:</p> <ul style="list-style-type: none">(a.) Member must have at least six months of allowable service credit in each plan worked under; and(b.) Member may not be in receipt of a benefit from another plan. <p>Members who meet the above requirements must have their benefits based on the following:</p> <ul style="list-style-type: none">(a.) Allowable service in all covered plans is combined in order to determine eligibility for early retirement.(b.) Average salary is based on the high five consecutive years during their entire service in all covered plans.
Changes in plan provisions	<p>There have been no changes in plan provisions since the prior valuation.</p>

Summary of Plan Provisions – Minneapolis Police Relief Association

Normal retirement benefit	Monthly benefits are equal to the number of units multiplied by the unit values described herein. Units are based on service, as follows:														
	<table border="0"> <thead> <tr> <th style="text-align: center;"><u>Service</u></th> <th style="text-align: center;"><u>Units</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">20</td> <td style="text-align: center;">35.0 units</td> </tr> <tr> <td style="text-align: center;">21</td> <td style="text-align: center;">36.6 units</td> </tr> <tr> <td style="text-align: center;">22</td> <td style="text-align: center;">38.2 units</td> </tr> <tr> <td style="text-align: center;">23</td> <td style="text-align: center;">39.8 units</td> </tr> <tr> <td style="text-align: center;">24</td> <td style="text-align: center;">41.4 units</td> </tr> <tr> <td style="text-align: center;">25 or more</td> <td style="text-align: center;">43.0 units</td> </tr> </tbody> </table>	<u>Service</u>	<u>Units</u>	20	35.0 units	21	36.6 units	22	38.2 units	23	39.8 units	24	41.4 units	25 or more	43.0 units
<u>Service</u>	<u>Units</u>														
20	35.0 units														
21	36.6 units														
22	38.2 units														
23	39.8 units														
24	41.4 units														
25 or more	43.0 units														
	Members must be at least age 50 with 5 years of service to receive this benefit.														
Unit values	<table border="0" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;"><u>Calendar Year</u></th> <th style="text-align: center;"><u>Unit Value</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2012</td> <td style="text-align: center;">\$ 104.651</td> </tr> <tr> <td style="text-align: center;">2013</td> <td style="text-align: center;">109.011</td> </tr> <tr> <td style="text-align: center;">2014</td> <td style="text-align: center;">114.825</td> </tr> <tr> <td style="text-align: center;">2015</td> <td style="text-align: center;">124.031</td> </tr> </tbody> </table> <p style="text-align: center;">Unit values after 2015 are assumed to increase the same percentage as the post-retirement benefit increase.</p>	<u>Calendar Year</u>	<u>Unit Value</u>	2012	\$ 104.651	2013	109.011	2014	114.825	2015	124.031				
<u>Calendar Year</u>	<u>Unit Value</u>														
2012	\$ 104.651														
2013	109.011														
2014	114.825														
2015	124.031														
Surviving spouse's benefit	Annual benefit based on 23 units for the surviving spouse of an active or retired member. Upon retirement, members may choose an alternative form of payment that provides 50%, 75%, or 100% of their benefit to their spouse after their death. The units are adjusted if one of these alternate forms is selected.														
Surviving children's benefit	Annual benefit based on 8 units for each surviving child of an active or retired member. Benefits continue to age 18 or if the child is a full-time student, to age 22. The total benefit for surviving children and spouse combined is limited to 41 units.														
Contributions	Member and employer contributions equal to 8.00% of the monthly unit value multiplied by 80 are required for each member. After 25 years of service, member contributions are paid to a separate health insurance account.														
	Until July 15, 2018, the employer contributed annually an amount to amortize the unfunded liability by December 31, 2031. Beginning July 15, 2019, the employer will contribute \$4,489,837 each July 15 through 2031.														
Benefit increases	Benefit recipients receive 1.00% increases each year in January.														

Summary of Plan Provisions – Minneapolis Firefighters’ Relief Association

Normal retirement benefit	Monthly benefits are equal to the number of units multiplied by the unit values described herein. Units are based on service, as follows:	
	<u>Service</u>	<u>Units</u>
	15	25.0 units
	16	26.6 units
	17	28.2 units
	18	29.8 units
	19	31.4 units
	20	35.0 units
	21	36.6 units
	22	38.2 units
	23	39.8 units
	24	41.4 units
	25 or more	43.0 units
	Members must be at least age 50 with 5 years of service to receive this benefit.	
	Members may choose among alternative survivor payment forms which modify the number of units payable to the member and their spouse. A member who is single at the time of retirement and who has at least 25 years of service may choose to receive 43.3 units on the condition of a reduced survivor payment to any future spouse.	
Unit values	<u>Calendar Year</u>	<u>Unit Value</u>
	2013	100.775
	2014	104.264
	2015	124.031
	Unit values after 2015 are assumed to increase the same percentage as the post-retirement benefit increase.	
Disability benefit	Annual benefit based on 41 units for the disabled member.	
Surviving spouse’s benefit	Annual benefit based on 23 units for the surviving spouse of an active or retired member and 22 units for the surviving spouse of a disabled member. Upon retirement, members may choose an alternative form of payment that provides 50%, 75% or 100% of their benefit to their spouse after their death. The units are adjusted if one of these alternate forms is selected.	
Surviving children’s benefit	Annual benefit based on 8 units for each surviving child of an active or retired member. Benefits continue to age 18 or if the child is a full-time student, to age 22. The total benefit for surviving children and spouse combined is limited to 43 units.	
Contributions	Member and employer contributions equal to 8.00% of the monthly unit value multiplied by 80 are required for each member. After 25 years of service, member contributions are paid to a separate health insurance account.	
	Until July 15, 2018, the employer contributed annually an amount to amortize the unfunded liability by December 31, 2031. Beginning July 15, 2019, the employer will contribute \$3,188,735 each July 15 through 2031.	
Benefit increases	Benefit recipients receive 1.00% increases each year in January.	

SECTION F

**ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS
USED FOR THE DETERMINATION OF TOTAL PENSION LIABILITY
AND RELATED VALUES**

Actuarial Methods Used for the Determination of Total Pension Liability and Related Values

Actuarial Cost Method

Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an **Individual Entry-Age Actuarial Cost Method** having the following characteristics:

- (i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and
- (ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains/(losses), as they occur, reduce (increase) the Total Pension Liability.

Asset Valuation Method

Fair value of assets.

Summary of Actuarial Assumptions

The following assumptions were used in valuing the liabilities and benefits under the plan. The assumptions are based on the last experience study dated August 30, 2016, and a review of inflation and investment assumptions in the experience study report for the General Employees Retirement Plan dated June 27, 2019.

The Allowance for Combined Service Annuity assumptions are based on an analysis completed by the LCPR actuary and documented in a report dated October 2016.

Investment return	7.50% per annum.								
Single Discount Rate	7.50% per annum.								
Salary increases	Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service earned during the year.								
Inflation	2.50% per year.								
Payroll growth	3.25% per year.								
Mortality rates									
Healthy pre-retirement	RP-2014 employee generational mortality table projected with mortality improvement scale MP-2019, from a base year of 2006.								
Healthy post-retirement	RP-2014 annuitant generational mortality table projected with mortality improvement scale MP-2019 from a base year of 2006. Male rates are adjusted by a factor of 0.96.								
Disabled	RP-2014 annuitant generational mortality table projected with mortality improvement scale MP-2019 from a base year of 2006. Male rates are adjusted by a factor of 0.96.								
Notes	The RP-2014 employee mortality table as published by the Society of Actuaries (SOA) contains mortality rates for ages 18 to 80 and the annuitant mortality table contains mortality rates for ages 50 to 120. We have extended the annuitant mortality table as needed for members and beneficiaries younger than age 50 who are receiving a benefit by deriving rates based on the employee table and the juvenile table. Similarly, we have extended the employee table as needed for members older than age 80 by deriving rates based on the annuitant table.								
Retirement	Members retiring from active status are assumed to retire according to the age related rates shown in the rate table. Members who have attained the highest assumed retirement age are assumed to retire in one year. Note that plan changes reflected in this report may ultimately result in behavior changes that are not anticipated in the current retirement rates.								
Withdrawal	Select and Ultimate rates based on actual experience. Ultimate rates after the third year are shown in the rate table. Select rates in the first three years are:								
	<table border="1"> <thead> <tr> <th style="text-align: center;">Year</th> <th style="text-align: center;">Select Withdrawal Rates</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">3.00%</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">3.00%</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">3.00%</td> </tr> </tbody> </table>	Year	Select Withdrawal Rates	1	3.00%	2	3.00%	3	3.00%
Year	Select Withdrawal Rates								
1	3.00%								
2	3.00%								
3	3.00%								

Summary of Actuarial Assumptions (Continued)

Disability	Age-related rates based on experience; see table of sample rates. All incidences are assumed to be duty-related.
Allowance for combined service annuity	Liabilities for former members are increased by 33.0% for vested members and 2.0% for non-vested members to account for the effect of some participants having eligibility for a Combined Service Annuity.
Administrative expenses	In the valuation year, equal to prior year administrative expenses expressed as percentage of prior year projected payroll. In each subsequent year, equal to the initial administrative expense percentage applied to payroll for the closed group.
Refund of contributions	Account balances accumulate interest until normal retirement date and are discounted back to the valuation date. All employees withdrawing after becoming eligible for a deferred benefit take the larger of their contributions accumulated with interest or the value of their deferred benefit.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 55.
Percentage married	85% of male and 60% of female active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Males are assumed to be two years older than females. For members in payment status, actual spouse date of birth is used, if provided.
Eligible children	Retiring members are assumed to have no dependent children.
Form of payment	<p>Married members retiring from active status are assumed to elect subsidized joint and survivor form of annuity as follows:</p> <p>Males: 10% elect 25% Joint & Survivor option 20% elect 50% Joint & Survivor option 20% elect 75% Joint & Survivor option 35% elect 100% Joint & Survivor option</p> <p>Females: 20% elect 25% Joint & Survivor option 20% elect 50% Joint & Survivor option 10% elect 75% Joint & Survivor option 20% elect 100% Joint & Survivor option</p> <p>Remaining married members and unmarried members are assumed to elect the Straight Life option.</p> <p>Members receiving deferred annuities (including current terminated deferred members) are assumed to elect a straight life annuity.</p>
Eligibility testing	Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.
Decrement operation	Withdrawal decrements do not operate during retirement eligibility. Decrements are assumed to occur mid-fiscal year.
Service credit accruals	It is assumed that members accrue one year of service credit per year.

Summary of Actuarial Assumptions (Continued)

Pay Increases	Pay increases are assumed to happen at the beginning of the fiscal year. This is equivalent to assuming that reported earnings are pensionable earnings for the year ending on the valuation date.
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Unknown data for certain members	<p>To prepare this report, GRS has used and relied on participant data supplied by the Fund. Although GRS has reviewed the data in accordance with Actuarial Standards of Practice No. 23, GRS has not verified or audited any of the data or information provided.</p> <p>In cases where submitted data was missing or incomplete, the following assumptions, based on average results for applicable members at the time of the last experience study, were applied:</p> <p><u>Data for active members:</u> There were 24 members reported with a salary less than \$100. We used prior year salary (16 members), if available; otherwise high five salary with a 10% load to account for salary increases (7 members). If neither prior year salary nor high five salary was available, we assumed a value of \$60,000. Note former members of Minneapolis Fire are excluded from these salary counts as salary is not used to calculate the benefit.</p> <p>There were also 163 members reported without a gender. We assumed male gender. There was 1 member reported without a date of birth. We assumed a date of birth of July 1, 1985.</p> <p><u>Data for terminated members:</u> We calculated benefits for these members using the reported Average Salary and credited service. If Average Salary was not reported (1 member), we assumed a value of \$24,000. If credited service was not reported (16 members), we used elapsed time from hire date to termination date (8 members); if elapsed time was not available, we assumed nine years of service. If termination date was invalid or not reported (9 members), we assumed the termination date was equal to the hire date plus credited service, otherwise the valuation date. If the reported termination date occurs prior to the reported hire date, the two dates were swapped.</p> <p>There were 8 members reported without a gender; male was assumed.</p> <p>There were no members reported without a date of birth.</p> <p><u>Data for retired members:</u> There were no members with missing or invalid dates of birth or benefit amounts. There were 21 members reported without a gender. We assumed retirees are male and beneficiaries are female.</p>
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Summary of Actuarial Assumptions (Continued)

Unknown data for certain members (Continued)	<u>Data for retired members (Continued):</u> Because PERA reclassifies disabled members as retirees once the member reaches Normal Retirement Age, we compare the members that PERA reports as retirees to our disabled group from the last valuation. If a member was disabled in the prior valuation, we reclassify that member as a disabled retiree in this year's valuation. We reclassified 239 retirees as disabled retirees in this valuation.
Changes in actuarial assumptions	The mortality projection scale was changed from MP-2018 to MP-2019.

Summary of Actuarial Assumptions (Continued)

Age in 2020	Percentage of Members Dying Each Year*					
	Healthy Post- Retirement Mortality		Healthy Pre- Retirement Mortality		Disability Mortality	
	Males	Females	Males	Females	Males	Females
20	0.04%	0.02%	0.05%	0.02%	0.04%	0.02%
25	0.07	0.04	0.06	0.02	0.07	0.04
30	0.11	0.08	0.06	0.03	0.11	0.08
35	0.17	0.14	0.08	0.04	0.17	0.14
40	0.24	0.20	0.08	0.05	0.24	0.20
45	0.30	0.23	0.11	0.07	0.30	0.23
50	0.40	0.28	0.17	0.11	0.40	0.28
55	0.56	0.39	0.29	0.18	0.56	0.39
60	0.80	0.60	0.50	0.28	0.80	0.60
65	1.14	0.87	0.89	0.40	1.14	0.87
70	1.67	1.31	1.44	0.64	1.67	1.31
75	2.65	2.14	2.39	1.10	2.65	2.14
80	4.49	3.68	4.06	1.94	4.49	3.68
85	7.88	6.60	8.00	5.16	7.88	6.60
90	13.87	11.78	14.62	11.36	13.87	11.78

* Generally, mortality rates are expected to increase as age increases. These standard mortality rates have been adjusted slightly to prevent decreasing mortality rates. The adjustment has no material effect on results.

Age	Withdrawal Rates After Third Year		Rates of Disability Retirement	
	Males	Females	Males	Females
20	3.00%	3.00%	0.11%	0.11%
25	2.60	2.60	0.13	0.13
30	2.10	2.10	0.16	0.16
35	1.60	1.60	0.19	0.19
40	1.25	1.25	0.29	0.29
45	1.25	1.25	0.54	0.54
50	0.00	0.00	1.04	1.04
55	0.00	0.00	2.03	2.03
60	0.00	0.00	0.00	0.00

Summary of Actuarial Assumptions (Concluded)

Age	Rates of Service	Salary Scale	
	Retirement	Year	Increase
50	10.00%	1	12.25%
51	7.00	2	10.50%
52	7.00	3	8.75%
53	10.00	4	7.75%
54	10.00	5	6.25%
55	25.00	6	5.75%
56	22.50	7	5.25%
57	22.50	8	5.00%
58	22.50	9	4.75%
59	20.00	10	4.50%
60	22.50	11	4.25%
61	25.00	12	4.15%
62	30.00	13	4.05%
63	30.00	14	3.95%
64	30.00	15	3.85%
65	50.00	16	3.75%
66	50.00	17	3.75%
67	50.00	18	3.75%
68	50.00	19	3.75%
69	50.00	20	3.75%
70+	100.00	21	3.65%
		22	3.55%
		23	3.45%
		24	3.35%
		25+	3.25%

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

Calculation of the Single Discount Rate

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed long-term rate of return is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal bond rate is required, as described in the following paragraph.

The *Single Discount Rate* (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.50%, the municipal bond rate is 2.45%; and **the resulting single discount rate is 7.50%**.

The tables in this section provide background for the development of the single discount rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities).

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate. It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

Single Discount Rate Development Projection of Contributions (Dollars in Thousands)

Fiscal Year Ending	Payroll			Projected Contributions					
	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward current UAL*	Contributions due from Mergers	Additional State Contributions**	Total Contributions
2020	\$ 1,069,481	\$ 0	\$ 1,069,481						
2021	1,065,993	10,341	1,076,334	\$ 125,787	\$ 188,681	\$ 906	\$ 7,679	\$ 18,000	\$ 341,053
2022	1,058,033	53,282	1,111,315	124,848	187,272	4,667	7,679	18,000	342,466
2023	1,045,532	101,900	1,147,432	123,373	185,059	8,927	7,679	18,000	343,038
2024	1,029,792	154,932	1,184,724	121,515	182,273	13,572	7,679	18,000	343,039
2025	1,010,963	212,264	1,223,227	119,294	178,941	18,594	7,679	18,000	342,508
2026	989,392	273,590	1,262,982	116,748	175,122	23,966	7,679	18,000	341,515
2027	965,815	338,214	1,304,029	113,966	170,949	29,628	7,679	18,000	340,222
2028	940,499	405,911	1,346,410	110,979	166,468	35,558	7,679	18,000	338,684
2029	913,951	476,218	1,390,169	107,846	161,769	41,717	7,679	18,000	337,011
2030	886,027	549,322	1,435,349	104,551	156,827	48,121	7,679	18,000	335,178
2031	856,532	625,466	1,481,998	101,071	151,606	54,791	7,679	9,000	324,147
2032	825,796	704,367	1,530,163	97,444	146,166	61,703	7,679	9,000	321,992
2033	793,552	786,341	1,579,893	93,639	140,459	68,884	0	9,000	311,982
2034	759,896	871,344	1,631,240	89,668	134,502	76,330	0	9,000	309,500
2035	724,812	959,443	1,684,255	85,528	128,292	84,047	0	9,000	306,867
2036	688,202	1,050,791	1,738,993	81,208	121,812	92,049	0	0	295,069
2037	650,124	1,145,386	1,795,510	76,715	115,072	100,336	0	0	292,123
2038	610,680	1,243,185	1,853,865	72,060	108,090	108,903	0	0	289,053
2039	570,207	1,343,908	1,914,115	67,284	100,927	117,726	0	0	285,937
2040	528,905	1,447,419	1,976,324	62,411	93,616	126,794	0	0	282,821
2041	487,012	1,553,542	2,040,554	57,467	86,201	136,090	0	0	279,758
2042	444,751	1,662,121	2,106,872	52,481	78,721	145,602	0	0	276,804
2043	402,372	1,772,974	2,175,346	47,480	71,220	155,313	0	0	274,013
2044	360,494	1,885,551	2,246,045	42,538	63,807	165,174	0	0	271,519
2045	319,423	1,999,618	2,319,041	37,692	56,538	175,167	0	0	269,397
2046	279,255	2,115,155	2,394,410	32,952	49,428	185,288	0	0	267,668
2047	240,441	2,231,787	2,472,228	28,372	42,558	195,505	0	0	266,435
2048	203,634	2,348,942	2,552,576	24,029	36,043	205,767	0	0	265,839
2049	169,787	2,465,747	2,635,534	20,035	30,052	215,999	0	0	266,086
2050	139,330	2,581,859	2,721,189	16,441	24,661	226,171	0	0	267,273
2051	112,313	2,697,315	2,809,628	13,253	19,879	236,285	0	0	269,417
2052	88,898	2,812,043	2,900,941	10,490	15,735	246,335	0	0	272,560
2053	69,180	2,926,041	2,995,221	8,163	12,245	256,321	0	0	276,729
2054	53,044	3,039,522	3,092,566	6,259	9,389	266,262	0	0	281,910
2055	40,084	3,152,990	3,193,074	4,730	7,095	276,202	0	0	288,027
2056	29,833	3,267,016	3,296,849	3,520	5,280	286,191	0	0	294,991
2057	21,730	3,382,267	3,403,997	2,564	3,846	296,287	0	0	302,697
2058	15,366	3,499,261	3,514,627	1,813	2,720	306,535	0	0	311,068
2059	10,506	3,618,346	3,628,852	1,240	1,859	316,967	0	0	320,066
2060	6,916	3,739,874	3,746,790	816	1,224	327,613	0	0	329,653
2061	4,340	3,864,220	3,868,560	512	768	338,506	0	0	339,786
2062	2,565	3,991,724	3,994,289	303	454	349,675	0	0	350,432
2063	1,417	4,122,686	4,124,103	167	251	361,147	0	0	361,565
2064	732	4,257,404	4,258,136	86	130	372,949	0	0	373,165
2065	353	4,396,173	4,396,526	42	62	385,105	0	0	385,209
2066	158	4,539,255	4,539,413	19	28	397,639	0	0	397,686
2067	63	4,686,881	4,686,944	7	11	410,571	0	0	410,589
2068	21	4,839,249	4,839,270	2	4	423,918	0	0	423,924
2069	5	4,996,541	4,996,546	1	1	437,697	0	0	437,699
2070	1	5,158,933	5,158,934	0	-	451,923	0	0	451,923

* Equal to contributions (29.50% of payroll for new employees) net of normal cost and expenses (20.74% of payroll).

** State contributions equal to \$9 million are assumed to end after 10 years. Actual end date of this \$9 million annual contribution will depend on the funding status of this plan and the MSRS State Patrol Plan. Additional state contributions of \$9.0 million until 100% funded on an actuarial value of assets basis are assumed to stop after 15 years.



Single Discount Rate Development Projection of Contributions (Concluded) (Dollars in Thousands)

Fiscal Year Ending	Payroll			Projected Contributions					
	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll toward current UAL*	Contributions due from Mergers	Additional State Contributions**	Total Contributions
2071	\$ 0	\$ 5,326,599	\$ 5,326,599	\$ 0	\$ 0	\$ 466,610	\$ 0	\$ 0	\$ 466,610
2072	0	5,499,713	5,499,713	0	0	481,775	0	0	481,775
2073	0	5,678,454	5,678,454	0	0	497,433	0	0	497,433
2074	0	5,863,004	5,863,004	0	0	513,599	0	0	513,599
2075	0	6,053,551	6,053,551	0	0	530,291	0	0	530,291
2076	0	6,250,292	6,250,292	0	0	547,526	0	0	547,526
2077	0	6,453,426	6,453,426	0	0	565,320	0	0	565,320
2078	0	6,663,163	6,663,163	0	0	583,693	0	0	583,693
2079	0	6,879,715	6,879,715	0	0	602,663	0	0	602,663
2080	0	7,103,306	7,103,306	0	0	622,250	0	0	622,250
2081	0	7,334,164	7,334,164	0	0	642,473	0	0	642,473
2082	0	7,572,524	7,572,524	0	0	663,353	0	0	663,353
2083	0	7,818,631	7,818,631	0	0	684,912	0	0	684,912
2084	0	8,072,736	8,072,736	0	0	707,172	0	0	707,172
2085	0	8,335,100	8,335,100	0	0	730,155	0	0	730,155
2086	0	8,605,991	8,605,991	0	0	753,885	0	0	753,885
2087	0	8,885,686	8,885,686	0	0	778,386	0	0	778,386
2088	0	9,174,471	9,174,471	0	0	803,684	0	0	803,684
2089	0	9,472,641	9,472,641	0	0	829,803	0	0	829,803
2090	0	9,780,502	9,780,502	0	0	856,772	0	0	856,772
2091	0	10,098,368	10,098,368	0	0	884,617	0	0	884,617
2092	0	10,426,565	10,426,565	0	0	913,367	0	0	913,367
2093	0	10,765,428	10,765,428	0	0	943,052	0	0	943,052
2094	0	11,115,305	11,115,305	0	0	973,701	0	0	973,701
2095	0	11,476,552	11,476,552	0	0	1,005,346	0	0	1,005,346
2096	0	11,849,540	11,849,540	0	0	1,038,020	0	0	1,038,020
2097	0	12,234,650	12,234,650	0	0	1,071,755	0	0	1,071,755
2098	0	12,632,276	12,632,276	0	0	1,106,587	0	0	1,106,587
2099	0	13,042,825	13,042,825	0	0	1,142,552	0	0	1,142,552
2100	0	13,466,717	13,466,717	0	0	1,179,684	0	0	1,179,684
2101	0	13,904,386	13,904,386	0	0	1,218,024	0	0	1,218,024
2102	0	14,356,278	14,356,278	0	0	1,257,610	0	0	1,257,610
2103	0	14,822,857	14,822,857	0	0	1,298,482	0	0	1,298,482
2104	0	15,304,600	15,304,600	0	0	1,340,683	0	0	1,340,683
2105	0	15,801,999	15,801,999	0	0	1,384,255	0	0	1,384,255
2106	0	16,315,564	16,315,564	0	0	1,429,243	0	0	1,429,243
2107	0	16,845,820	16,845,820	0	0	1,475,694	0	0	1,475,694
2108	0	17,393,309	17,393,309	0	0	1,523,654	0	0	1,523,654
2109	0	17,958,592	17,958,592	0	0	1,573,173	0	0	1,573,173
2110	0	18,542,246	18,542,246	0	0	1,624,301	0	0	1,624,301
2111	0	19,144,869	19,144,869	0	0	1,677,091	0	0	1,677,091
2112	0	19,767,077	19,767,077	0	0	1,731,596	0	0	1,731,596
2113	0	20,409,507	20,409,507	0	0	1,787,873	0	0	1,787,873
2114	0	21,072,816	21,072,816	0	0	1,845,979	0	0	1,845,979
2115	0	21,757,683	21,757,683	0	0	1,905,973	0	0	1,905,973
2116	0	22,464,808	22,464,808	0	0	1,967,917	0	0	1,967,917
2117	0	23,194,914	23,194,914	0	0	2,031,874	0	0	2,031,874
2118	0	23,948,749	23,948,749	0	0	2,097,910	0	0	2,097,910
2119	0	24,727,083	24,727,083	0	0	2,166,092	0	0	2,166,092
2120	0	25,530,713	25,530,713	0	0	2,236,490	0	0	2,236,490

* Equal to contributions (29.50% of payroll for new employees) net of normal cost and expenses (20.74% of payroll).

** State contributions equal to \$9 million are assumed to end after 10 years. Actual end date of this \$9 million annual contribution will depend on the funding status of this plan and the MSRS State Patrol Plan. Additional state contributions of \$9.0 million until 100% funded on an actuarial value of assets basis are assumed to stop after 15 years.



Single Discount Rate Development Projection of Plan Fiduciary Net Position (Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.50%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2021	\$ 8,973,460	\$ 341,053	\$ 595,469	\$ 959	\$ 663,606	\$ 9,381,691
2022	9,381,691	342,466	619,507	952	693,390	9,797,088
2023	9,797,088	343,037	644,870	941	723,633	10,217,947
2024	10,217,947	343,040	671,748	927	754,208	10,642,520
2025	10,642,520	342,508	699,171	910	785,022	11,069,969
2026	11,069,969	341,516	727,783	890	815,992	11,498,804
2027	11,498,804	340,222	757,102	869	847,028	11,928,083
2028	11,928,083	338,684	786,312	846	878,092	12,357,701
2029	12,357,701	337,011	814,539	823	909,214	12,788,564
2030	12,788,564	335,178	843,725	797	940,387	13,219,607
2031	13,219,607	324,147	873,764	771	971,204	13,640,423
2032	13,640,423	321,991	903,467	743	1,001,593	14,059,797
2033	14,059,797	311,981	933,585	714	1,031,570	14,469,049
2034	14,469,049	309,499	963,821	684	1,061,060	14,875,103
2035	14,875,103	306,867	994,349	652	1,090,294	15,277,263
2036	15,277,263	295,069	1,025,475	619	1,118,877	15,665,115
2037	15,665,115	292,122	1,056,913	585	1,146,701	16,046,440
2038	16,046,440	289,053	1,088,611	550	1,174,021	16,420,353
2039	16,420,353	285,937	1,120,077	513	1,200,793	16,786,493
2040	16,786,493	282,821	1,151,758	476	1,226,973	17,144,053
2041	17,144,053	279,759	1,182,715	438	1,252,539	17,493,198
2042	17,493,198	276,803	1,212,911	400	1,277,505	17,834,195
2043	17,834,195	274,012	1,242,076	362	1,301,905	18,167,674
2044	18,167,674	271,520	1,269,967	324	1,325,799	18,494,702
2045	18,494,702	269,396	1,296,849	287	1,349,259	18,816,221
2046	18,816,221	267,668	1,322,646	251	1,372,361	19,133,353
2047	19,133,353	266,435	1,347,001	216	1,395,205	19,447,776
2048	19,447,776	265,839	1,369,290	183	1,417,945	19,762,087
2049	19,762,087	266,087	1,388,215	153	1,440,832	20,080,638
2050	20,080,638	267,273	1,403,342	125	1,464,210	20,408,654
2051	20,408,654	269,417	1,414,587	101	1,488,478	20,751,861
2052	20,751,861	272,560	1,421,358	80	1,514,085	21,117,068
2053	21,117,068	276,729	1,423,153	62	1,541,564	21,512,146
2054	21,512,146	281,910	1,419,970	48	1,571,503	21,945,541
2055	21,945,541	288,027	1,412,317	36	1,604,515	22,425,730
2056	22,425,730	294,991	1,400,692	27	1,641,214	22,961,216
2057	22,961,216	302,697	1,385,738	20	1,682,210	23,560,365
2058	23,560,365	311,068	1,367,801	14	1,728,116	24,231,734
2059	24,231,734	320,066	1,347,063	9	1,779,563	24,984,291
2060	24,984,291	329,653	1,323,731	6	1,837,217	25,827,424
2061	25,827,424	339,786	1,298,057	4	1,901,771	26,770,920
2062	26,770,920	350,432	1,270,269	2	1,973,948	27,825,029
2063	27,825,029	361,565	1,240,577	1	2,054,510	29,000,526
2064	29,000,526	373,165	1,209,199	1	2,144,255	30,308,746
2065	30,308,746	385,209	1,176,362	0	2,244,024	31,761,617
2066	31,761,617	397,685	1,142,260	0	2,354,704	33,371,746
2067	33,371,746	410,589	1,107,052	0	2,477,236	35,152,519
2068	35,152,519	423,924	1,070,856	0	2,612,617	37,118,204
2069	37,118,204	437,698	1,033,771	0	2,761,917	39,284,048
2070	39,284,048	451,923	995,886	0	2,926,274	41,666,359

For purposes of this projection, we assumed the current fixed rate contribution would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.



Single Discount Rate Development

Projection of Plan Fiduciary Net Position (Concluded)

(Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.50%	Projected Ending Plan Net Position
(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)	
2071	\$ 41,666,359	\$ 466,610	\$ 957,278	\$ 0	\$ 3,106,909	\$ 44,282,600
2072	44,282,600	481,775	918,024	0	3,305,131	47,151,482
2073	47,151,482	497,433	878,194	0	3,522,341	50,293,062
2074	50,293,062	513,599	837,863	0	3,760,039	53,728,837
2075	53,728,837	530,291	797,109	0	4,019,838	57,481,857
2076	57,481,857	547,526	756,016	0	4,303,462	61,576,829
2077	61,576,829	565,320	714,676	0	4,612,763	66,040,236
2078	66,040,236	583,693	673,190	0	4,949,722	70,900,461
2079	70,900,461	602,663	631,668	0	5,316,467	76,187,923
2080	76,187,923	622,250	590,233	0	5,715,273	81,935,213
2081	81,935,213	642,473	549,020	0	6,148,582	88,177,248
2082	88,177,248	663,353	508,181	0	6,619,007	94,951,427
2083	94,951,427	684,912	467,885	0	7,129,348	102,297,802
2084	102,297,802	707,172	428,319	0	7,682,603	110,259,258
2085	110,259,258	730,155	389,684	0	8,281,981	118,881,710
2086	118,881,710	753,885	352,190	0	8,930,919	128,214,324
2087	128,214,324	778,386	316,047	0	9,633,099	138,309,762
2088	138,309,762	803,684	281,457	0	10,392,462	149,224,451
2089	149,224,451	829,803	248,606	0	11,213,235	161,018,883
2090	161,018,883	856,772	217,661	0	12,099,949	173,757,943
2091	173,757,943	884,617	188,762	0	13,057,468	187,511,266
2092	187,511,266	913,367	162,027	0	14,091,011	202,353,617
2093	202,353,617	943,052	137,538	0	15,206,182	218,365,313
2094	218,365,313	973,701	115,352	0	16,409,004	235,632,666
2095	235,632,666	1,005,346	95,490	0	17,705,953	254,248,475
2096	254,248,475	1,038,020	77,945	0	19,103,987	274,312,537
2097	274,312,537	1,071,755	62,670	0	20,610,597	295,932,219
2098	295,932,219	1,106,587	49,583	0	22,233,837	319,223,060
2099	319,223,060	1,142,552	38,561	0	23,982,381	344,309,432
2100	344,309,432	1,179,684	29,448	0	25,865,561	371,325,229
2101	371,325,229	1,218,024	22,061	0	27,893,430	400,414,622
2102	400,414,622	1,257,610	16,198	0	30,076,808	431,732,842
2103	431,732,842	1,298,482	11,645	0	32,427,347	465,447,026
2104	465,447,026	1,340,683	8,191	0	34,957,592	501,737,110
2105	501,737,110	1,384,255	5,635	0	37,681,047	540,796,777
2106	540,796,777	1,429,243	3,791	0	40,612,246	582,834,475
2107	582,834,475	1,475,694	2,495	0	43,766,832	628,074,506
2108	628,074,506	1,523,654	1,609	0	47,161,633	676,758,184
2109	676,758,184	1,573,173	1,019	0	50,814,754	729,145,092
2110	729,145,092	1,624,301	637	0	54,745,668	785,514,424
2111	785,514,424	1,677,091	395	0	58,975,321	846,166,441
2112	846,166,441	1,731,596	246	0	63,526,235	911,424,026
2113	911,424,026	1,787,873	154	0	68,422,629	981,634,374
2114	981,634,374	1,845,979	99	0	73,690,547	1,057,170,801
2115	1,057,170,801	1,905,973	66	0	79,357,989	1,138,434,697
2116	1,138,434,697	1,967,917	45	0	85,455,063	1,225,857,632
2117	1,225,857,632	2,031,874	32	0	92,014,139	1,319,903,613
2118	1,319,903,613	2,097,910	23	0	99,070,019	1,421,071,519
2119	1,421,071,519	2,166,092	17	0	106,660,123	1,529,897,717
2120	1,529,897,717	2,236,490	13	0	114,824,680	1,646,958,874

For purposes of this projection, we assumed the current fixed rate contribution would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.



Single Discount Rate Development

Present Values of Projected Benefits

(Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v ^{(a)-.5}	(g)=(e)*vf ^{(a)-.5}	(h)=(c)/(1+sdr) ^{(a)-.5}
2021	\$ 8,973,460	\$ 595,469	\$ 595,469	\$ 0	\$ 574,322	\$ 0	\$ 574,322
2022	9,381,690	619,507	619,507	0	555,819	0	555,819
2023	9,797,088	644,870	644,870	0	538,209	0	538,209
2024	10,217,947	671,748	671,748	0	521,527	0	521,527
2025	10,642,520	699,171	699,171	0	504,946	0	504,946
2026	11,069,969	727,783	727,783	0	488,940	0	488,940
2027	11,498,803	757,102	757,102	0	473,150	0	473,150
2028	11,928,082	786,312	786,312	0	457,122	0	457,122
2029	12,357,699	814,539	814,539	0	440,494	0	440,494
2030	12,788,563	843,725	843,725	0	424,444	0	424,444
2031	13,219,605	873,764	873,764	0	408,889	0	408,889
2032	13,640,421	903,467	903,467	0	393,292	0	393,292
2033	14,059,796	933,585	933,585	0	378,049	0	378,049
2034	14,469,047	963,821	963,821	0	363,063	0	363,063
2035	14,875,101	994,349	994,349	0	348,431	0	348,431
2036	15,277,260	1,025,475	1,025,475	0	334,267	0	334,267
2037	15,665,111	1,056,913	1,056,913	0	320,479	0	320,479
2038	16,046,437	1,088,611	1,088,611	0	307,061	0	307,061
2039	16,420,351	1,120,077	1,120,077	0	293,894	0	293,894
2040	16,786,491	1,151,758	1,151,758	0	281,123	0	281,123
2041	17,144,051	1,182,715	1,182,715	0	268,539	0	268,539
2042	17,493,195	1,212,911	1,212,911	0	256,181	0	256,181
2043	17,834,193	1,242,076	1,242,076	0	244,038	0	244,038
2044	18,167,673	1,269,967	1,269,967	0	232,110	0	232,110
2045	18,494,700	1,296,849	1,296,849	0	220,486	0	220,486
2046	18,816,219	1,322,646	1,322,646	0	209,184	0	209,184
2047	19,133,351	1,347,001	1,347,001	0	198,173	0	198,173
2048	19,447,773	1,369,290	1,369,290	0	187,397	0	187,397
2049	19,762,083	1,388,215	1,388,215	0	176,732	0	176,732
2050	20,080,633	1,403,342	1,403,342	0	166,193	0	166,193
2051	20,408,650	1,414,587	1,414,587	0	155,837	0	155,837
2052	20,751,857	1,421,358	1,421,358	0	145,659	0	145,659
2053	21,117,064	1,423,153	1,423,153	0	135,668	0	135,668
2054	21,512,141	1,419,970	1,419,970	0	125,920	0	125,920
2055	21,945,536	1,412,317	1,412,317	0	116,504	0	116,504
2056	22,425,725	1,400,692	1,400,692	0	107,484	0	107,484
2057	22,961,212	1,385,738	1,385,738	0	98,917	0	98,917
2058	23,560,362	1,367,801	1,367,801	0	90,825	0	90,825
2059	24,231,731	1,347,063	1,347,063	0	83,207	0	83,207
2060	24,984,289	1,323,731	1,323,731	0	76,062	0	76,062
2061	25,827,422	1,298,057	1,298,057	0	69,383	0	69,383
2062	26,770,918	1,270,269	1,270,269	0	63,160	0	63,160
2063	27,825,027	1,240,577	1,240,577	0	57,380	0	57,380
2064	29,000,524	1,209,199	1,209,199	0	52,027	0	52,027
2065	30,308,744	1,176,362	1,176,362	0	47,083	0	47,083
2066	31,761,615	1,142,260	1,142,260	0	42,528	0	42,528
2067	33,371,744	1,107,052	1,107,052	0	38,342	0	38,342
2068	35,152,517	1,070,856	1,070,856	0	34,501	0	34,501
2069	37,118,203	1,033,771	1,033,771	0	30,982	0	30,982
2070	39,284,047	995,886	995,886	0	27,765	0	27,765

Single Discount Rate Development

Present Values of Projected Benefits (Concluded)

(Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v ^{(a)-5}	(g)=(e)*vf ^{(a)-5}	(h)=(c)/(1+sdr) ^{(a)-5}
2071	\$ 41,666,358	\$ 957,278	\$ 957,278	\$ 0	\$ 24,826	\$ 0	\$ 24,826
2072	44,282,599	918,024	918,024	0	22,147	0	22,147
2073	47,151,481	878,194	878,194	0	19,708	0	19,708
2074	50,293,061	837,863	837,863	0	17,491	0	17,491
2075	53,728,836	797,109	797,109	0	15,479	0	15,479
2076	57,481,856	756,016	756,016	0	13,657	0	13,657
2077	61,576,828	714,676	714,676	0	12,010	0	12,010
2078	66,040,236	673,190	673,190	0	10,523	0	10,523
2079	70,900,461	631,668	631,668	0	9,185	0	9,185
2080	76,187,923	590,233	590,233	0	7,984	0	7,984
2081	81,935,212	549,020	549,020	0	6,908	0	6,908
2082	88,177,247	508,181	508,181	0	5,948	0	5,948
2083	94,951,426	467,885	467,885	0	5,095	0	5,095
2084	102,297,801	428,319	428,319	0	4,338	0	4,338
2085	110,259,257	389,684	389,684	0	3,672	0	3,672
2086	118,881,709	352,190	352,190	0	3,087	0	3,087
2087	128,214,323	316,047	316,047	0	2,577	0	2,577
2088	138,309,761	281,457	281,457	0	2,135	0	2,135
2089	149,224,449	248,606	248,606	0	1,754	0	1,754
2090	161,018,881	217,661	217,661	0	1,429	0	1,429
2091	173,757,941	188,762	188,762	0	1,152	0	1,152
2092	187,511,264	162,027	162,027	0	920	0	920
2093	202,353,616	137,538	137,538	0	727	0	727
2094	218,365,311	115,352	115,352	0	567	0	567
2095	235,632,664	95,490	95,490	0	437	0	437
2096	254,248,473	77,945	77,945	0	331	0	331
2097	274,312,535	62,670	62,670	0	248	0	248
2098	295,932,217	49,583	49,583	0	182	0	182
2099	319,223,059	38,561	38,561	0	132	0	132
2100	344,309,430	29,448	29,448	0	94	0	94
2101	371,325,228	22,061	22,061	0	65	0	65
2102	400,414,620	16,198	16,198	0	45	0	45
2103	431,732,841	11,645	11,645	0	30	0	30
2104	465,447,025	8,191	8,191	0	20	0	20
2105	501,737,109	5,635	5,635	0	13	0	13
2106	540,796,775	3,791	3,791	0	8	0	8
2107	582,834,473	2,495	2,495	0	5	0	5
2108	628,074,504	1,609	1,609	0	3	0	3
2109	676,758,181	1,019	1,019	0	2	0	2
2110	729,145,088	637	637	0	1	0	1
2111	785,514,420	395	395	0	1	0	1
2112	846,166,436	246	246	0	0	0	0
2113	911,424,021	154	154	0	0	0	0
2114	981,634,368	99	99	0	0	0	0
2115	1,057,170,795	66	66	0	0	0	0
2116	1,138,434,691	45	45	0	0	0	0
2117	1,225,857,626	32	32	0	0	0	0
2118	1,319,903,608	23	23	0	0	0	0
2119	1,421,071,514	17	17	0	0	0	0
2120	1,529,897,712	13	13	0	0	0	0
Totals					\$ 12,360,807	\$ 0	\$ 12,360,807



SECTION H

GLOSSARY OF TERMS

Glossary of Terms

<i>Actuarial Accrued Liability (AAL)</i>	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as “accrued liability” or “actuarial liability.”
<i>Actuarial Assumptions</i>	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
<i>Accrued Service</i>	Service credited under the system which was rendered before the date of the actuarial valuation.
<i>Actuarial Equivalent</i>	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
<i>Actuarial Cost Method</i>	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
<i>Actuarial Gain (Loss)</i>	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
<i>Actuarial Present Value (APV)</i>	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future benefit payments at predetermined rates of interest to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
<i>Actuarial Valuation</i>	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
<i>Actuarial Valuation Date</i>	The date as of which an actuarial valuation is performed.
<i>Actuarially Determined Contribution (ADC)</i>	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically, the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

Glossary of Terms

<i>Amortization Payment</i>	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
<i>Amortization Method</i>	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be “open” (meaning, reset each year) or “closed” (the number of years remaining will decline each year).
<i>Cost-of-Living Adjustments</i>	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
<i>Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)</i>	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
<i>Covered-Employee Payroll</i>	The payroll of covered employees, which is typically only the pensionable pay (meets the statutory salary definition) and does not include pay above any pay cap.
<i>Deferred Inflows and Outflows of Resources</i>	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
<i>Discount Rate or Single Discount Rate</i>	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: <ol style="list-style-type: none">1. The benefit payments to be made while the pension plans’ fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.
<i>Entry Age Actuarial Cost Method or Entry Age Normal (EAN)</i>	The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit age(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

Glossary of Terms

<i>GASB</i>	The Governmental Accounting Standards Board is an organization that exists with authority to promulgate accounting standards for state and local governmental entities.
<i>Fiduciary Net Position</i>	The fiduciary net position is the value of the net assets of the trust restricted for pension benefits.
<i>Long-Term Expected Rate of Return</i>	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
<i>Money-Weighted Rate of Return</i>	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
<i>Multiple-Employer Defined Benefit Pension Plan</i>	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
<i>Municipal Bond Rate</i>	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
<i>Net Pension Liability (NPL)</i>	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
<i>Non-Employer Contribution Entities</i>	Non-employer contribution entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting Statements No. 67 and No. 68 plan members are not considered non-employer contribution entities.
<i>Normal Cost</i>	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.
<i>Other Postemployment Benefits (OPEB)</i>	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other postemployment benefits do not include termination benefits.
<i>Real Rate of Return</i>	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
<i>Service Cost</i>	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.

Glossary of Terms

Total Pension Expense

The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year:

1. Service Cost
2. Interest on the Total Pension Liability
3. Current-Period Changes in Benefit Terms
4. Employee Contributions
5. Projected Earnings on Plan Investments
6. Pension Plan Administrative Expense
7. Other Changes in Plan Fiduciary Net Position
8. Recognition of Outflow (Inflow) of Resources due to the difference between expected and actual in measurement of the Total Pension Liability
9. Recognition of Outflows (Inflow) of Resources due to Assumption Changes
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on pension plan investments

Total Pension Liability (TPL)

The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.

Unfunded Actuarial Accrued Liability (UAAL)

The UAAL is the difference between actuarial accrued liability and valuation assets.

Valuation Assets

The valuation assets are the plan fiduciary net position used in determining the net position liability of the plan. For purposes of the GASB Statement No. 67, the asset valuation method is equal to the market value of assets.

Public Employees Retirement Association of Minnesota

Local Government Correctional Service Retirement Plan
GASB Statements No. 67 and No. 68 Accounting
and Financial Reporting for Pensions
June 30, 2020





November 13, 2020

Public Employees Retirement Association of Minnesota
Local Government Correctional Service Retirement Plan
St. Paul, Minnesota

Dear Trustees of the Local Government Correctional Service Retirement Plan:

This report provides accounting and financial reporting information that is intended to comply with the Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68 for the Local Government Correctional Service Retirement Plan ("LGCSR"), as amended by Statement No. 82. These calculations have been made on a basis that is consistent with our understanding of these accounting standards.

GASB Statement No. 67 is the accounting standard that applies to the financial reports issued by retirement systems. GASB Statement No. 68 establishes accounting and financial reporting for state and local government employers who provide their employees (including former employees) pension benefits through a trust. GASB Statement No. 82 is an amendment to Statements No. 67, No. 68, and No. 73, intended to improve consistency in the application of the accounting standards.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of providing reporting and disclosure information that satisfies the requirements of GASB Statements No. 67 and No. 68. The Net Pension Liability is not an appropriate measure for measuring the sufficiency of plan assets to cover the estimated cost of settling the employer's benefit obligations. The Net Pension Liability is not an appropriate measure for assessing the need for or amount of future employer contributions. The calculation of the plan's liability for this report may not be applicable for purposes of funding the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statements No. 67 and No. 68 may produce significantly different results. The information in this report is calculated on a total plan basis. PERA is responsible for preparing the Schedule of Employer Allocations and the Schedule of Pension Amounts by Employer. This report may be provided to parties other than the Public Employees Retirement Association (PERA) only in its entirety and only with the permission of PERA. GRS is not responsible for unauthorized use of this report.

This report is based upon information, furnished to us by PERA, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. If your understanding of this information is different, please let us know. This information was checked for internal consistency, but it was not audited.

This report complements the actuarial valuation report for funding purposes that was or will be provided to the Plan and should be considered in conjunction with that report. Please see the actuarial valuation report as of June 30, 2020 for additional discussion of the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

To the best of our knowledge, the information contained within this report is accurate and fairly represents the actuarial position of the Local Government Correctional Service Retirement Plan as of the measurement date. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

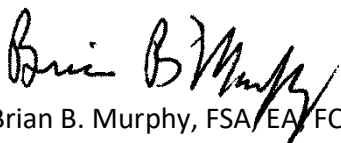
This report does not fully reflect the recent and still developing impact of COVID-19, which is likely to influence demographic and investment experience, at least in the short term. We will continue to monitor these developments and their impact on the plan.

This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

Brian B. Murphy and Bonita J. Wurst are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,



Brian B. Murphy, FSA/EA/FCA, MAAA, PhD



Bonita J. Wurst, ASA, FSA, EA, MAAA



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SECTION A

EXECUTIVE SUMMARY

Executive Summary

as of June 30, 2020 (Dollars in Thousands)

	2020
Actuarial Valuation Date	June 30, 2020
Measurement Date of the Net Pension Liability	June 30, 2020
Employer's Fiscal Year Ending Date (Reporting Date)	Varies by Employer

Membership

Number of	
- Service Retirements	1,164
- Survivors	72
- Disability Retirements	207
- Deferred Retirements	3,637
- Terminated other non-vested	2,184
- Active Members	3,855
- Total	11,119
Covered Payroll	\$ 217,702

Net Pension Liability

Total Pension Liability	\$ 814,456
Plan Fiduciary Net Position	787,322
Net Pension Liability	\$ 27,134
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	96.67%
Net Pension Liability as a Percentage of Covered Payroll	12.46%

Development of the Single Discount Rate

Single Discount Rate	7.50%
Long-Term Expected Rate of Investment Return	7.50%
Long-Term Municipal Bond Rate*	2.45%
Last year ending June 30 in the 2021 to 2120 projection period for which projected benefit payments are fully funded	2120

Total Pension Expense/(Income) **\$ (50,640)**

Deferred Outflows and Inflows by Source Arising from Current and Prior Periods to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	\$ 254	\$ 9,984
Changes in assumptions	\$ -	\$ 54,950
Net difference between projected and actual earnings on pension plan investments	\$ 19,983	\$ 14,820
Total	\$ 20,237	\$ 79,754

* Source: Based on the 20-Year Municipal GO Index of mixed maturity general obligation municipal bonds as of the weekly rate closest to but not later than the Measurement Date.



Discussion

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans* establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68, *Accounting and Financial Reporting for Pensions* establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements. Governmental Accounting Standards Board (GASB) Statement No. 82, *Pension Issues*, is an amendment to Statements No. 67, No. 68, and No. 73, intended to improve consistency in the application of the accounting standards.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state and local governmental employers to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Paragraph 57 of GASB Statement No. 68 states, "Contributions to the pension plan from the employer subsequent to the measurement date of the collective net pension liability and before the end of the employer's reporting period should be reported as a deferred outflow of resources related to pensions." The information contained in this report does not incorporate any contributions made to LGCSRSP subsequent to the measurement date of June 30, 2020.

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the liability and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a Statement of Fiduciary Net Position and a Statement of Changes in Fiduciary Net Position in accordance with GASB Statement No. 67. The *Statement of Fiduciary Net Position* presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The *Statement of Changes in Fiduciary Net Position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Notes to Financial Statements

GASB Statement No. 68 requires the notes to the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

Both GASB Statements No. 67 and No. 68 require the notes to the financial statements for the employers and pension plans to include certain descriptive information about the pension plans through which the pension benefits are provided. The list of disclosure items should include:

- A description of benefits provided by the plan;
- The classes of employees and number of members covered by the pension plan;
- A description of the plan's funding policy, which includes member and employer contribution requirements;
- The pension plan's investment policies;
- The pension plan's fiduciary net position, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- The net pension liability using a discount rate that is 1% higher and 1% lower than the current discount rate used to calculate the total pension liability and net pension liability for financial reporting purposes;
- Significant assumptions and methods used to calculate the total pension liability;
- Inputs to the discount rates; and
- Certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with Statement No. 67. This information includes:

- The composition of the pension plan's Board and the authority under which benefit terms may be amended;
- A description of how fair value is determined;
- Information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets; and
- Annual money-weighted rate of return.

Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- Sources of changes in the net pension liability;
- Information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- Comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. For employer reporting, the net pension liability and pension expense should be measured as of a date (measurement date) no earlier than the end of the employer's prior fiscal year, consistently applied from period to period. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2020 and a measurement date of June 30, 2020.

Measurement of the Net Pension Liability

The net pension liability is to be measured as the total pension liability, less the amount of the pension plan's fiduciary net position. In actuarial terms, this will be the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 7.50%), then the following outcomes are expected:

- (1) The normal cost of the plan is expected to remain approximately level as a percent of pay,
- (2) The funded status of the plan is expected to gradually improve and is expected to be 100% funded within the next 28 years, and
- (3) The unfunded liability will grow initially as a dollar amount before beginning to decline.

The projections in this report are strictly for the purpose of determining the GASB single discount rate and are different from a funding projection for the ongoing plan.

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the market value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

- (1) The measurement is inappropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations, in other words, of transferring the obligations to an unrelated third party in an arm's length market value type transaction.
- (2) The measurement is dependent upon the actuarial cost method which, in combination with the plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
- (3) The measurement would produce a different result if the actuarial value of assets were used instead of the market value of assets.

Limitation of Project Scope

Actuarial standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entity to make required contributions to the plan when due. Such an evaluation was not within the scope of this project and is not within the actuary's domain of expertise. Consequently, the actuary performed no such evaluation.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a single discount rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the long-term expected rate of return on pension plan investments is 7.50%; the municipal bond rate is 2.45% (based on the weekly rate closest to but not later than the measurement date of Fidelity's "20-Year Municipal GO AA Index"); and the resulting single discount rate is 7.50%.

SECTION B

FINANCIAL STATEMENTS

Statement of Pension Expense Under GASB Statement No. 68

Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

A. Expense

1.	Service Cost	\$	33,172
2.	Interest on the Total Pension Liability	\$	57,354
3.	Current-Period Benefit Changes	\$	-
4.	Employee Contributions (made negative for addition here)	\$	(12,692)
5.	Projected Earnings on Plan Investments (made negative for addition here)	\$	(56,249)
6.	Pension Plan Administrative Expense	\$	332
7.	Other Changes in Plan Fiduciary Net Position	\$	-
8.	Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability <i>Arising from Current Reporting Period</i>	\$	(3,021)
9.	Recognition of Outflow (Inflow) of Resources due to assumption changes <i>Arising from Current Reporting Period</i>	\$	(494)
10.	Recognition of Outflow (Inflow) of Resources due to the difference between projected (7.50%) and actual earnings on Pension Plan Investments <i>Arising from Current Reporting Period</i>	\$	4,895
11.	Increase/(Decrease) from Experience in the Current Reporting Period	\$	23,297
12.	Recognition of Outflow (Inflow) of Resources due to differences between expected and actual experience in the measurement of the Total Pension Liability <i>Arising from Prior Reporting Periods</i>	\$	(1,087)
13.	Recognition of Outflow (Inflow) of Resources due to assumption changes <i>Arising from Prior Reporting Periods</i>	\$	(69,452)
14.	Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings on Pension Plan Investments <i>Arising from Prior Reporting Periods</i>	\$	(3,398)
15.	Total Pension Expense / (Income)	\$	(50,640)

Recognition of Deferred Outflows and Inflows of Resources

Differences between expected and actual experience and changes in assumptions are recognized in pension expense using a systematic and rational method over a closed period equal to the average of the expected remaining service lives of all employees that are provided with pension through the pension plan (active employees and inactive employees) determined as of the beginning of the measurement period.

At the beginning of the current measurement period, the expected remaining service lives of all active employees in the plan was approximately 40,223 years. Additionally, the total plan membership (active employees and inactive employees) was 11,447. As a result, the average of the expected remaining service lives for purposes of recognizing the applicable deferred outflows and inflows of resources established in the current measurement period is 4.00 years.

Additionally, differences between projected and actual earnings on plan investments should be recognized in pension expense using a systematic and rational method over a closed five-year period. For this purpose, the deferred outflows and inflows of resources are recognized in the pension expense as a level dollar amount over the closed period identified above.



Statement of Outflows and Inflows Arising from Current Reporting Period Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

A. Outflows (Inflows) of Resources due to Liabilities

1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	\$	(12,083)
2. Assumption Changes (gains) or losses	\$	(1,977)
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}		4.0000
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability	\$	(3,021)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	\$	(494)
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	\$	(3,515)
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	\$	(9,062)
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	\$	(1,483)
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	\$	(10,545)

B. Outflows (Inflows) of Resources due to Assets

1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$	24,475
2. Recognition period for Assets {in years}		5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	\$	4,895
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$	19,580



Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

A. Outflows and Inflows of Resources due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	\$ 254	\$ 74,308	\$ (74,054)
2. Due to Assets	\$ 12,873	\$ 11,376	\$ 1,497
3. Total	\$ 13,127	\$ 85,684	\$ (72,557)

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	\$ 254	\$ 4,362	\$ (4,108)
2. Assumption Changes	\$ -	\$ 69,946	\$ (69,946)
3. Net Difference between projected and actual earnings on pension plan investments	\$ 12,873	\$ 11,376	\$ 1,497
4. Total	\$ 13,127	\$ 85,684	\$ (72,557)

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	\$ 254	\$ 9,984	\$ (9,730)
2. Assumption Changes	\$ -	\$ 54,950	\$ (54,950)
3. Net Difference between projected and actual earnings on pension plan investments	\$ 19,983	\$ 14,820	\$ 5,163
4. Total	\$ 20,237	\$ 79,754	\$ (59,517)

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources
2021	\$ (62,985)
2022	\$ (2,942)
2023	\$ 1,515
2024	\$ 4,895
2025	\$ -
Thereafter	\$ -
Total	\$ (59,517)

Recognition of Deferred Outflows and Inflows of Resources Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

Year	Initial Amount	Initial Recognition Period	Current Year Recognition	Remaining Recognition	Remaining Recognition Period
Deferred Outflow (Inflow) Due to Differences Between Expected and Actual Experience on Liabilities					
2017	\$ (3,516)	4.0000	\$ (879)	\$ 0	0.0000
2018	1,018	4.0000	254	254	1.0000
2019	(1,846)	4.0000	(462)	(922)	2.0000
2020	(12,083)	4.0000	(3,021)	(9,062)	3.0000
Total			\$ (4,108)	\$ (9,730)	
Deferred Outflow (Inflow) Due to Assumption Changes					
2017	\$ (66,147)	4.0000	\$ (16,536)	\$ 0	0.0000
2018	(209,457)	4.0000	(52,364)	(52,365)	1.0000
2019	(2,206)	4.0000	(552)	(1,102)	2.0000
2020	(1,977)	4.0000	(494)	(1,483)	3.0000
Total			\$ (69,946)	\$ (54,950)	
Deferred Outflow (Inflow) Due to Differences Between Projected and Actual Earnings on Plan Investments					
2016	\$ 39,224	5.0000	\$ 7,844	\$ 0	0.0000
2017	(39,668)	5.0000	(7,933)	(7,933)	1.0000
2018	(17,216)	5.0000	(3,443)	(6,887)	2.0000
2019	671	5.0000	134	403	3.0000
2020	24,475	5.0000	4,895	19,580	4.0000
Total			\$ 1,497	\$ 5,163	
Deferred Outflow (Inflow) due to All Sources					
Total			\$ (72,557)	\$ (59,517)	

Statement of Fiduciary Net Position (Dollars in Thousands)

	Market Value	
	June 30, 2020	June 30, 2019
Assets in Trust		
Cash, equivalents, short term securities	\$ 34,069	\$ 20,842
Fixed income	\$ 160,323	\$ 151,524
Equity	\$ 469,467	\$ 463,263
Private Markets	\$ 123,096	\$ 108,365
Other	\$ -	\$ -
Total Assets in Trust	\$ 786,955	\$ 743,994
Assets Receivable	\$ 912	\$ 965
Amounts Payable	\$ 545	\$ (536)
Net Position Restricted for Pensions	\$ 787,322	\$ 744,423

Statement of Changes in Fiduciary Net Position (Dollars in Thousands)

Change in Assets	Market Value	
Year Ending	June 30, 2020	June 30, 2019
1. Fund balance at market value at beginning of year	\$ 744,423	\$ 680,395
2. Adjustment to match beginning of year asset statement	\$ -	\$ -
3. Fund balance at market value at beginning of year	\$ 744,423	\$ 680,395
4. Contributions		
a. Member	\$ 12,692	\$ 12,485
b. Employer	\$ 19,043	\$ 18,676
c. Other sources	\$ -	\$ -
d. Total contributions	\$ 31,735	\$ 31,161
5. Investment income		
a. Investment income/(loss)	\$ 32,484	\$ 51,549
b. Investment expenses	\$ (710)	\$ (696)
c. Net subtotal	\$ 31,774	\$ 50,853
6. Other	\$ -	\$ -
7. Total additions: (4.d.) + (5.c.) + (6.)	\$ 63,509	\$ 82,014
8. Benefits Paid		
a. Annuity benefits	\$ (17,569)	\$ (15,381)
b. Refunds	\$ (2,709)	\$ (2,244)
c. Total benefits paid	\$ (20,278)	\$ (17,625)
9. Expenses		
a. Other	\$ -	\$ -
b. Administrative	\$ (332)	\$ (361)
c. Total expenses	\$ (332)	\$ (361)
10. Total deductions: (8.c.) + (9.c.)	\$ (20,610)	\$ (17,986)
11. Net increase (decrease) in net position: (7.) + (10.)	\$ 42,899	\$ 64,028
12. Net position restricted for pensions	\$ 787,322	\$ 744,423
13. Approximate return on market value of assets	4.2%	7.3%

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios

Current Period

Fiscal Year Ended June 30, 2020 (Dollars in Thousands)

A. Total pension liability	
1. Service Cost	\$ 33,172
2. Interest on the Total Pension Liability	\$ 57,354
3. Changes of benefit terms	\$ -
4. Difference between expected and actual experience of the Total Pension Liability	\$ (12,083)
5. Changes of assumptions	\$ (1,977)
6. Benefit payments, including refunds of employee contributions	\$ (20,278)
7. Net change in total pension liability	\$ 56,188
8. Total pension liability – beginning	\$ 758,268
9. Total pension liability – ending	<u><u>\$ 814,456</u></u>
B. Plan fiduciary net position	
1. Contributions – employer	\$ 19,043
2. Contributions – employee	\$ 12,692
3. Net investment income	\$ 31,774
4. Benefit payments, including refunds of employee contributions	\$ (20,278)
5. Pension Plan Administrative Expense	\$ (332)
6. Other	\$ -
7. Net change in plan fiduciary net position	\$ 42,899
8. Plan fiduciary net position – beginning	\$ 744,423
9. Plan fiduciary net position – ending	<u><u>\$ 787,322</u></u>
C. Net pension liability	<u><u>\$ 27,134</u></u>
D. Plan fiduciary net position as a percentage of the total pension liability	96.67%
E. Covered-employee payroll*	\$ 217,702
F. Net pension liability as a percentage of covered-employee payroll	12.46%

* Assumed equal to actual member contributions divided by employee contribution rate.



Schedules of Required Supplementary Information

Schedule of Changes in Net Pension Liability and Related Ratios Multiyear (Dollars in Thousands)

Last 10 Fiscal Years (which may be built prospectively)

Fiscal year ending June 30,	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Total Pension Liability										
Service Cost	\$ 33,172	\$ 30,362	\$ 45,378	\$ 49,202	\$ 25,950	\$ 25,098	\$ 26,488			
Interest on the Total Pension Liability	\$ 57,354	\$ 52,741	\$ 53,811	\$ 47,336	\$ 40,605	\$ 37,043	\$ 33,955			
Benefit Changes	\$ -	\$ -	\$ (66,822)	\$ -	\$ -	\$ -	\$ -			
Experience	\$ (12,083)	\$ (1,846)	\$ 1,018	\$ (3,516)	\$ 382	\$ (7,892)	\$ (5,327)			
Assumption Changes	\$ (1,977)	\$ (2,206)	\$ (209,457)	\$ (66,147)	\$ 310,332	\$ -	\$ (34,168)			
Benefit Payments	\$ (17,569)	\$ (15,381)	\$ (13,183)	\$ (11,033)	\$ (9,381)	\$ (7,777)	\$ (6,711)			
Refunds	\$ (2,709)	\$ (2,244)	\$ (1,364)	\$ (1,478)	\$ (982)	\$ (1,057)	\$ (1,105)			
Net Change in Total Pension Liability	\$ 56,188	\$ 61,426	\$ (190,619)	\$ 14,364	\$ 366,906	\$ 45,415	\$ 13,132			
Total Pension Liability - Beginning	\$ 758,268	\$ 696,842	\$ 887,461	\$ 873,097	\$ 506,191	\$ 460,776	\$ 447,644			
Total Pension Liability - Ending (a)	\$ 814,456	\$ 758,268	\$ 696,842	\$ 887,461	\$ 873,097	\$ 506,191	\$ 460,776			
Plan Fiduciary Net Position										
Employer Contributions	\$ 19,043	\$ 18,676	\$ 17,871	\$ 17,489	\$ 16,490	\$ 15,736	\$ 15,054			
Employee Contributions	\$ 12,692	\$ 12,485	\$ 11,956	\$ 11,666	\$ 11,008	\$ 10,472	\$ 10,030			
Pension Plan Net Investment Income	\$ 31,774	\$ 50,853	\$ 62,962	\$ 78,363	\$ 209	\$ 20,373	\$ 69,451			
Benefit Payments	\$ (17,569)	\$ (15,381)	\$ (13,183)	\$ (11,033)	\$ (9,381)	\$ (7,777)	\$ (6,711)			
Refunds	\$ (2,709)	\$ (2,244)	\$ (1,364)	\$ (1,478)	\$ (982)	\$ (1,057)	\$ (1,105)			
Pension Plan Administrative Expense	\$ (332)	\$ (361)	\$ (308)	\$ (330)	\$ (290)	\$ (247)	\$ (236)			
Other	\$ -	\$ -	\$ 1	\$ -	\$ (2)	\$ (1)	\$ (1)			
Net Change in Plan Fiduciary Net Position	\$ 42,899	\$ 64,028	\$ 77,935	\$ 94,677	\$ 17,052	\$ 37,499	\$ 86,482			
Plan Fiduciary Net Position - Beginning	\$ 744,423	\$ 680,395	\$ 602,460	\$ 507,783	\$ 490,731	\$ 453,232	\$ 366,750			
Plan Fiduciary Net Position - Ending (b)	\$ 787,322	\$ 744,423	\$ 680,395	\$ 602,460	\$ 507,783	\$ 490,731	\$ 453,232			
Net Pension Liability - Ending (a) - (b)	\$ 27,134	\$ 13,845	\$ 16,447	\$ 285,001	\$ 365,314	\$ 15,460	\$ 7,544			
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	96.67 %	98.17 %	97.64 %	67.89 %	58.16 %	96.95 %	98.36 %			
Covered Employee Payroll	\$ 217,702	\$ 214,151	\$ 205,077	\$ 200,103	\$ 188,816	\$ 179,623	\$ 172,041			
Net Pension Liability as a Percentage of Covered Employee Payroll	12.46 %	6.47 %	8.02 %	142.43 %	193.48 %	8.61 %	4.39 %			
Notes to Schedule:										
N/A										



Schedules of Required Supplementary Information

Schedule of Net Pension Liability Multiyear (Dollars in Thousands)

Last 10 Fiscal Years (which may be built prospectively)

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll	Net Pension Liability as a % of Covered Payroll
2011						
2012						
2013						
2014	\$ 460,776	\$ 453,232	\$ 7,544	98.36%	\$ 172,041	4.39%
2015	\$ 506,191	\$ 490,731	\$ 15,460	96.95%	\$ 179,623	8.61%
2016	\$ 873,097	\$ 507,783	\$ 365,314	58.16%	\$ 188,816	193.48%
2017	\$ 887,461	\$ 602,460	\$ 285,001	67.89%	\$ 200,103	142.43%
2018	\$ 696,842	\$ 680,395	\$ 16,447	97.64%	\$ 205,077	8.02%
2019	\$ 758,268	\$ 744,423	\$ 13,845	98.17%	\$ 214,151	6.47%
2020	\$ 814,456	\$ 787,322	\$ 27,134	96.67%	\$ 217,702	12.46%

Schedule of Contributions Multiyear (Dollars in Thousands)

Last 10 Fiscal Years

<u>FY Ending June 30,</u>	<u>Actuarially Determined Contribution</u>	<u>Actual Contribution</u>	<u>Contribution Deficiency (Excess)</u>	<u>Covered Payroll</u>	<u>Actual Contribution as a % of Covered Payroll</u>
2011	\$ 12,183	\$ 14,289	\$ (2,106)	\$ 165,077	8.66%
2012	\$ 12,473	\$ 14,320	\$ (1,847)	\$ 164,340	8.71
2013	\$ 14,207	\$ 14,498	\$ (291)	\$ 164,820	8.80
2014	\$ 14,606	\$ 15,054	\$ (448)	\$ 172,041	8.75
2015	\$ 13,759	\$ 15,736	\$ (1,977)	\$ 179,623	8.76
2016	\$ 16,446	\$ 16,490	\$ (44)	\$ 188,816	8.73
2017	\$ 17,269	\$ 17,489	\$ (220)	\$ 200,103	8.74
2018	\$ 19,031	\$ 17,871	\$ 1,160	\$ 205,077	8.71
2019	\$ 19,466	\$ 18,676	\$ 790	\$ 214,151	8.72
2020	\$ 19,593	\$ 19,043	\$ 550	\$ 217,702	8.75

Notes to Schedule of Contributions

Methods and Assumptions Used to Determine Contribution Rates for Fiscal Year Ending June 30, 2020:

Valuation Date	June 30, 2019
Notes	Actuarially determined contribution rates are calculated as of each June 30 and apply to the fiscal year beginning on the day after the measurement date.
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level Percentage of Payroll, Closed
Remaining Amortization Period	29 years
Asset Valuation Method	5-Year smoothed market; no corridor
Inflation	2.50%
Payroll Growth	3.25%
Salary Increases	3.50% to 8.50% including inflation
Investment Rate of Return	7.50%
Retirement Age	Experience-based table of rates that are specific to the type of eligibility condition. Last updated for the 2012 valuation pursuant to an experience study of the period 2006 - 2011, prepared by a former actuary.
Mortality	RP-2014 annuitant generational mortality table projected with mortality improvement scale MP-2018, from a base year of 2006. Male rates adjusted by a factor of 0.96.

Other Information:

Notes	The plan is assumed to pay a 2.00% post-retirement benefit increase for all years. See separate funding report as of July 1, 2019 for additional detail.
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Schedule of Investment Returns Multiyear

Last 10 Fiscal Years

<u>FY Ending June 30,</u>	<u>Annual Return¹</u>
2011	
2012	
2013	
2014	
2015	
2016	
2017	
2018	
2019	
2020	

¹ Annual money-weighted rate of return, net of investment expenses.

It is our understanding that this exhibit will be prepared by PERA with assistance from the State Board of Investment. Please provide a copy of the final exhibit for our files.

SECTION D

ADDITIONAL FINANCIAL STATEMENT DISCLOSURES

Asset Allocation

Long-Term Expected Return on Plan Assets

The long-term expected rate of return on pension plan investments was determined using a building-block method. Estimates for expected future real rates of return (expected returns, net of inflation) were developed for each asset class using both long-term historical returns and long-term capital market expectation from a number of investment management and consulting organizations. The asset class estimates and the target allocations were then combined to produce a geometric, long-term expected rate of return for the portfolio. Inflation expectations were applied to derive the nominal rate of return for the portfolio. For each major asset class that is included in the pension fund's target asset allocation as of June 30, 2020, these estimates are summarized in the following table:

<u>Asset Class</u>	<u>Target Allocation</u>	<u>Long-Term Expected Real Rate of Return (geometric)</u>
Domestic Equity	36%	5.10%
International Equity	17%	5.30%
Private Markets	25%	5.90%
Fixed Income	20%	0.75%
Unallocated Cash	2%	0.00%
Total	100%	

The Minnesota State Board of Investment (SBI) compiled this data and the related investment notes and provided it to PERA for GASB compliance purposes. PERA furnished this information to us for inclusion within this report. We did not audit this information. We are not responsible for its accuracy or completeness.

For purposes of this valuation, the long-term expected rate of return assumption is 7.50%. This assumption is based on a review of inflation and investment return assumptions in our experience study report for the General Employees Retirement Plan dated June 27, 2019.

Single Discount Rate

A single discount rate of 7.50% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 7.50%. The projection of cash flows used to determine this single discount rate assumed that plan member, employer, and state contributions will be made at the current statutory contribution rates. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Regarding the sensitivity of the net pension liability to changes in the single discount rate, the following presents the plan's net pension liability, calculated using a single discount rate of 7.50%, as well as what the plan's net pension liability would be if it were calculated using a single discount rate that is 1-percentage-point lower or 1-percentage-point higher:

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

(Dollars in Thousands)

	1% Decrease 6.50%	Current Single Discount Rate Assumption 7.50%	1% Increase 8.50%
Total Pension Liability	\$ 955,957	\$ 814,456	\$ 701,163
Net Position Restricted for Pensions	\$ 787,322	\$ 787,322	\$ 787,322
Net Pension Liability	\$ 168,635	\$ 27,134	\$ (86,159)

Note that we believe the 8.5% interest rate assumption would not comply with Actuarial Standards of Practice.

GASB Statement No. 68 Reconciliation (Dollars in Thousands)

Current Reporting Period

	Current Period					
	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Deferred Outflows	Deferred Inflows	Pension Expense*
Balance Beginning of Year	\$ 758,268	\$ 744,423	\$ 13,845			
Changes for the Year:						
Service Cost	\$ 33,172		\$ 33,172			\$ 33,172
Interest on Total Pension Liability	57,354		57,354			57,354
Interest on Fiduciary Net Position		\$ 56,249	(56,249)			(56,249)
Changes in Benefit Terms	-		-			-
Liability Experience Gains and Losses	(12,083)		(12,083)	\$ -	\$ 9,062	(3,021)
Changes in Assumptions	(1,977)		(1,977)	-	1,483	(494)
Contributions - Employer		19,043	(19,043)			
Contributions - Employees		12,692	(12,692)			(12,692)
Asset Gain/(Loss)		(24,475)	24,475	19,580	-	4,895
Benefit Payouts	(20,278)	(20,278)				
Administrative Expenses		(332)	332			332
Other		-	-			-
Net Changes	\$ 56,188	\$ 42,899	\$ 13,289	\$ 19,580	\$ 10,545	\$ 23,297
Balance End of Year	\$ 814,456	\$ 787,322	\$ 27,134			

* Pension Expense from Experience in the Current Reporting Period.

GASB Statement No. 68 Reconciliation (Dollars in Thousands)

Current and Prior Reporting Periods

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)	Deferred Outflows	Deferred Inflows	Net Deferred Outflows Prior Year	Total Pension Expense*
Balance Beginning of Year	\$ 758,268	\$ 744,423	\$ 13,845				
Changes for the Year:							
Service Cost	\$ 33,172		\$ 33,172				\$ 33,172
Interest on Total Pension Liability	57,354		57,354				57,354
Interest on Fiduciary Net Position		\$ 56,249	(56,249)				(56,249)
Changes in Benefit Terms	-		-				-
Liability Experience Gains and Losses	(12,083)		(12,083)	\$ 254	\$ 9,984	\$ (1,755)	(4,108)
Changes in Assumptions	(1,977)		(1,977)	-	54,950	(122,919)	(69,946)
Contributions - Employer		19,043	(19,043)				
Contributions - Employees		12,692	(12,692)				(12,692)
Asset Gain/(Loss)		(24,475)	24,475	19,983	14,820	(17,815)	1,497
Benefit Payouts	(20,278)	(20,278)					
Administrative Expenses		(332)	332				332
Other		-	-				-
Net Changes	\$ 56,188	\$ 42,899	\$ 13,289				\$ (50,640)
Balance End of Year	\$ 814,456	\$ 787,322	\$ 27,134	\$ 20,237	\$ 79,754	\$ (142,489)	

* Pension Expense from Experience in the Current and Prior Reporting Periods.

Summary of Population Statistics

	Terminated			Recipients			Total
	Actives	Deferred Retirement	Other Non-Vested	Service Retirement	Disability Retirement	Survivor	
Members on 7/1/2019	3,965	3,374	2,790	1,053	199	66	11,447
New members	587	-	-	-	-	-	587
Return to active	33	(11)	(22)	-	-	-	-
Terminated non-vested	(360)	-	360	-	-	-	-
Service retirements	(61)	(62)	-	123	-	-	-
Terminated deferred	(213)	213	-	-	-	-	-
Terminated refund/transfer	(82)	(61)	(467)	-	-	-	(610)
Deaths	(6)	(8)	(2)	(12)	(3)	-	(31)
New beneficiary	-	-	-	-	-	7	7
Disabled	(8)	-	-	-	8	-	-
Data correction	-	192	(475)	-	3	(1)	(281)
Net change	(110)	263	(606)	111	8	6	(328)
Members on 6/30/2020	3,855	3,637	2,184	1,164	207	72	11,119

SECTION E

SUMMARY OF BENEFITS

Summary of Plan Provisions

Following is a summary of the major plan provisions used in the valuation of this report. PERA is solely responsible for the validity, accuracy and comprehensiveness of this information. If any of the plan provisions shown below are not accurate and complete, the valuation results may differ significantly from those shown in this report and may require a revision of this report.

Plan year	July 1 through June 30.				
Eligibility	Local government employees in covered correctional service for a county administered jail or correctional facility or in a regional correctional facility administered by multiple counties, who are directly responsible for security, custody and control of persons confined in jail or facility, who are expected to respond to incidents within the jail or facility, and who are not members of the Public Employees Police and Fire Fund.				
Contributions	Shown as a percent of salary: <table style="margin-left: 40px;"> <tr> <td><u>Member</u></td> <td>5.83%</td> </tr> <tr> <td><u>Employer</u></td> <td>8.75%</td> </tr> </table> <p>Member contributions are “picked up” according to the provisions of Internal Revenue Code 414(h).</p>	<u>Member</u>	5.83%	<u>Employer</u>	8.75%
<u>Member</u>	5.83%				
<u>Employer</u>	8.75%				
Allowable service	Local Government Correctional Service during which member contributions were made (effective July 1, 1999). May also include certain leaves of absence, military service and periods while temporary Worker’s Compensation is paid.				
Salary	Includes amounts deducted for deferred compensation or supplemental retirement plans, net income from fees and sick leave payments funded by the employer. Excludes unused annual leaves and sick leave payments, severance payments, Workers’ Compensation benefits and employer-paid flexible spending accounts, cafeteria plans, healthcare expense accounts, day-care expenses, fringe benefits and the cost of insurance coverage.				
Average salary	Average of the five highest successive years of salary. Average Salary is based on all Allowable Service if less than five years.				
Vesting	Hired before July 1, 2010: 100% vested after 3 years of Allowable Service; Hired after June 30, 2010: 50% vested after 5 years of Allowable Service; 60% vested after 6 years of Allowable Service; 70% vested after 7 years of Allowable Service; 80% vested after 8 years of Allowable Service; 90% vested after 9 years of Allowable Service; and 100% vested after 10 years of Allowable Service.				
Retirement					
<u>Normal retirement benefit</u>					
Age/service requirement	Age 55 and vested. Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service.				
Amount	1.9% of Average Salary for each year of Allowable Service, pro rata for completed months, adjusted for partial vesting if applicable.				



Summary of Plan Provisions (Continued)

Retirement (Concluded)	
<u>Early Retirement</u>	
Age/service requirement	Age 50 and vested.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date with actuarial reduction to commencement age assuming 3% augmentation to age 55 (2.50% if hired after June 30, 2006). Augmentation adjustment is phased out over a five-year period starting July 1, 2019, resulting in no augmentation adjustment after June 30, 2024.
<u>Form of payment</u>	Life annuity. Actuarially equivalent options are: 25%, 50%, 75% or 100% Joint and Survivor. If a Joint and Survivor benefit is elected and the beneficiary predeceases the annuitant, the annuitant's benefit increases to the Life Annuity amount. This "bounce back" is subsidized by the plan.
<u>Benefit increases</u>	Benefit recipients receive increases each year in January based upon 100% of the current Social Security increase, not less than 1.0% and not more than 2.5%, beginning January 1, 2019. If the funding status declines to 85% for two consecutive years or 80% for one year, the maximum increase will be lowered to 1.5%. A benefit recipient who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Members receiving benefits for at least one month but less than 12 full months as of June 30 will receive a pro rata increase.

Disability	
<u>Duty Disability</u>	
Age/service requirement	Member who cannot perform his duties as a direct result of a disability relating to an act of duty specific to protecting the property and personal safety of others.
Amount	47.50% of Average Salary plus 1.90% of Average Salary for each year in excess of 25 years of Allowable Service (pro rata for completed months). Payment begins at disability and ends at age 65 or earlier if disability ceases or death occurs. Benefits may be paid upon re-employment but salary plus benefit cannot exceed current salary of position held at time of disability.
<u>Regular Disability</u>	
Age/service requirement	At least one year of Allowable Service and a disability preventing member from performing normal duties that arise out of activities not related to covered employment or while at work, activities related to duties that do not present inherent dangers specific to occupation.



Summary of Plan Provisions (Continued)

Disability (Concluded)	
Amount	Normal Retirement Benefit based on Allowable Service (minimum of 10 years) and Average Salary at disability. Payment begins at disability and ends at age 65 or earlier if disability ceases or death occurs. Benefits may be paid upon re-employment but salary plus benefit cannot exceed current salary of position held at time of disability.
<u>Retirement benefit</u>	
Age/service requirement	Age 65 with continued disability.
Amount	Any optional annuity continues. Otherwise, the larger of the disability benefit paid before age 65 or the normal retirement benefit available at age 65, or an actuarially equivalent optional annuity.
<u>Form of payment</u>	Same as for retirement.
<u>Benefit increases</u>	Same as for retirement.
<hr/>	
Death	
<u>Surviving spouse benefit</u>	
Age/service requirement	Vested active member at any age or vested former member age 50 or older who dies before retirement or disability benefit commences. If an active member dies, benefits may commence immediately, regardless of age.
Amount	Surviving spouse receives the 100% joint and survivor benefit using the Normal Retirement formula above. If commencement is prior to age 55, the appropriate early retirement formula described above applies except that one-half the monthly reduction factor is used from age 50 to the commencement age. In lieu of this benefit, the surviving spouse may elect a refund of contributions with interest or an actuarially equivalent term certain annuity (lump sum payable to estate at death).
Benefit increases	Same as for retirement.
<u>Surviving dependent children's benefit</u>	
Age/service requirement	If no surviving spouse, all dependent children (biological or adopted) below age 20 who are dependent for more than half of their support on deceased member.
Amount	Actuarially equivalent to surviving spouse 100% joint and survivor annuity payable to the later of age 20 or five years. The amount is to be proportionally divided among surviving children.
<hr/>	



Summary of Plan Provisions (Continued)

Death (Concluded)	
<u>Refund of contributions</u>	
Age/service requirement	Active employee dies and survivor benefits paid are less than member's contributions or a former employee dies before annuity begins.
Amount	If no survivor benefits are paid, the member's contributions with 6.00% interest until June 30, 2011; 4.00% to June 30, 2018; 3.00% thereafter. If survivor benefits are paid and accumulated contributions exceed total payments to the surviving spouse and children, then the remaining contributions are paid out.
Termination	
<u>Refund of contributions</u>	
Age/service requirement	Termination of local government service.
Amount	Member's contributions with 6.00% interest through June 30, 2011. Beginning July 1, 2011, a member's contributions increase at 4.00% interest. Beginning July 1, 2018, a member's contributions increase at 3.00% interest. If a member is vested, a deferred annuity may be elected in lieu of a refund.
<u>Deferred benefit</u>	
Age/service requirement	Partially or fully vested.
Amount	Benefit computed under law in effect at termination and increased by the following percentage (augmentation), compounded annually, if termination of employment is prior to January 1, 2012: <ul style="list-style-type: none"> (a.) 3.00% (2.50% if hired after June 30, 2006) until the earlier of January 1 of the year following attainment of age 55 and January 1, 2012; (b.) 5.00% (2.50% if hired after June 30, 2006) thereafter until the earlier of the date the annuity begins and January 1, 2012; (c.) 1.00% from January 1, 2012 through December 31, 2018; and (d.) 0.00% thereafter. <p>If a member terminates employment after 2011, they are not eligible for augmentation.</p> <p>Same as for retirement.</p>
<u>Form of payment</u>	
Actuarial equivalent factors	Effective July 1, 2019, actuarially equivalent factors based on the RP-2014 mortality table for healthy annuitants for a member turning age 55 in 2021, reflecting projected mortality improvements using Scale MP-2017, male rates multiplied by 0.96, blended 65% males, 4.88% post-retirement interest, and 7.5% pre-retirement interest. Reflecting statutory requirements, joint and survivor factors are based on an interest assumption of 6.50%.



Summary of Plan Provisions (Concluded)

Combined service annuity	<p>Members are eligible for combined service benefits if they:</p> <ul style="list-style-type: none">(a.) Meet minimum retirement age for each plan participated in and total public service meets the vesting requirements of each plan;or(b.) Have three or more years of service under PERA and the covered fund(s) (if hired prior to July 1, 2010). <p>Other requirements for combined service include:</p> <ul style="list-style-type: none">(a.) Member must have at least six months of allowable service credit in each plan worked under; and(b.) Member may not be in receipt of a benefit from another plan. <p>Members who meet the above requirements must have their benefit based on the following:</p> <ul style="list-style-type: none">(a.) Allowable service in all covered plans is combined in order to determine eligibility for early retirement.(b.) Average salary is based on the high five consecutive years during their entire service in all covered plans.
Changes in plan provisions	<p>There were no changes in plan provisions since the prior valuation.</p>

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Actuarial Methods used for the Determination of Total Pension Liability and Related Values

Actuarial Cost Method

Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using an **Individual Entry-Age Actuarial Cost Method** having the following characteristics:

- (i) the annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and
- (ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Actuarial gains/(losses), as they occur, reduce (increase) the Total Pension Liability.

Valuation of Future Post-Retirement Benefit Increases

Benefit increases after retirement will equal 100% of the Social Security Cost of Living Adjustment, not less than 1.0% and not more than 2.5%, beginning January 1, 2019; if the funding status declines to 85% for two consecutive years or 80% for one year, the maximum increase will be lowered to 1.5%. Stochastic modeling was used to determine the assumption that benefit increases will equal 2.00% per year. This is only an assumption; actual increases will depend on actual experience.

Asset Valuation Method

Fair value of assets.

Summary of Actuarial Assumptions Used for the Determination of Total Pension Liability and Related Values

The following assumptions were used in valuing the liabilities and benefits under the plan. The assumptions are based on the last experience study dated February 2012, prepared by a former actuary, and a review of inflation and investment assumptions in the experience study report for the General Employees Retirement Plan, dated June 27, 2019. The mortality assumption is based on the Public Employees' Police & Fire Plan experience study dated August 30, 2016. The Allowance for Combined Service Annuity assumptions are based on an analysis completed by the LCPR actuary and documented in a report dated October 2016.

Investment return	7.50% per annum.								
Single Discount Rate	7.50% per annum.								
Benefit increases after retirement	2.00% per annum.								
Salary increases	Reported salary at valuation date increased according to the rate table, to current fiscal year and annually for each future year. Prior fiscal year salary is annualized for members with less than one year of service earned during the year.								
Inflation	2.50% per year.								
Payroll growth	3.25% per year.								
Mortality rates									
Healthy pre-retirement	RP-2014 employee generational mortality table projected with mortality improvement scale MP-2019, from a base year of 2006.								
Healthy post-retirement	RP-2014 annuitant generational mortality table projected with mortality improvement scale MP-2019 from a base year of 2006. Male rates are adjusted by a factor of 0.96.								
Disabled	RP-2014 annuitant generational mortality table projected with mortality improvement scale MP-2019 from a base year of 2006. Male rates are adjusted by a factor of 0.96.								
Notes	The RP-2014 employee mortality table as published by the Society of Actuaries (SOA) contains mortality rates for ages 18 to 80 and the annuitant mortality table contains mortality rates for ages 50 to 120. We have extended the annuitant mortality table as needed for members and beneficiaries younger than age 50 who are receiving a benefit by deriving rates based on the employee table and the juvenile table. Similarly, we have extended the employee table as needed for members older than age 80 by deriving rates based on the annuitant table.								
Retirement	Members retiring from active status are assumed to retire according to the age related rates shown in the rate table. Members who have attained the highest assumed retirement age are assumed to retire in one year. Note that plan changes reflected in this report may result in behavior changes that are not anticipated in the current retirement rates.								
Withdrawal	Select and Ultimate rates based on actual experience. Ultimate rates after the third year are shown in the rate table. Select rates in the first three years are: <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Year</th> <th style="text-align: center;">Select Withdrawal Rates</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">25%</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">20%</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">15%</td> </tr> </tbody> </table>	Year	Select Withdrawal Rates	1	25%	2	20%	3	15%
Year	Select Withdrawal Rates								
1	25%								
2	20%								
3	15%								



Summary of Actuarial Assumptions (Continued)

Disability	Age-related rates based on experience; see table of sample rates. All incidences are assumed to be duty-related.
Allowance for combined service annuity	Liabilities for former members are increased by 35.0% for vested members and 1.0% for non-vested members to account for the effect of some participants having eligibility for a Combined Service Annuity.
Administrative expenses	In the valuation year, equal to prior year administrative expenses expressed as percentage of prior year projected payroll. In each subsequent year, equal to the initial administrative expense percentage applied to payroll for the closed group.
Refund of contributions	Account balances accumulate interest until normal retirement date and are discounted back to the valuation date. All employees withdrawing after becoming eligible for a deferred benefit take the larger of their contributions accumulated with interest or the value of their deferred benefit.
Commencement of deferred benefits	Members receiving deferred annuities (including current terminated deferred members) are assumed to begin receiving benefits at age 55.
Percentage married	85% of active members are assumed to be married. Actual marital status is used for members in payment status.
Age of spouse	Females are assumed to be three years younger than their male spouses. For members in payment status, actual spouse date of birth is used, if provided.
Eligible children	Retiring members are assumed to have no dependent children.
Form of payment	<p>Married members retiring from active status are assumed to elect subsidized joint and survivor form of annuity as follows:</p> <p style="margin-left: 40px;">Males: 5% elect 25% Joint & Survivor option 10% elect 50% Joint & Survivor option 10% elect 75% Joint & Survivor option 35% elect 100% Joint & Survivor option</p> <p style="margin-left: 40px;">Females: 5% elect 25% Joint & Survivor option 5% elect 50% Joint & Survivor option 5% elect 75% Joint & Survivor option 5% elect 100% Joint & Survivor option</p> <p>Remaining married members and unmarried members are assumed to elect the Straight Life option.</p> <p>Members receiving deferred annuities (including current terminated deferred members) are assumed to elect a straight life annuity.</p>
Eligibility testing	Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.
Decrement operation	Withdrawal decrements do not operate during retirement eligibility. Decrement are assumed to occur mid-fiscal year.
Service credit accruals	It is assumed that members accrue one year of service credit per year.
Pay Increases	Pay increases are assumed to happen at the beginning of the fiscal year. This is equivalent to assuming that reported earnings are pensionable earnings for the year ending on the valuation date.

Summary of Actuarial Assumptions (Continued)

Unknown data for certain members

To prepare this report, GRS has used and relied on participant data supplied by the Fund. Although GRS has reviewed the data in accordance with Actuarial Standards of Practice No. 23, GRS has not verified or audited any of the data or information provided.

In cases where submitted data was missing or incomplete, the following assumptions, based on average results for applicable members, were applied:

Data for active members:

There were 49 members reported with a salary less than \$100. We used prior year salary (39 members), if available; otherwise high five salary with a 10% load to account for salary increases (9 members). If neither prior year salary or high five salary was available, we assumed a value of \$43,000.

There were also 55 members reported without a gender and 4 members reported without a date of birth. We assumed an entry age of 30 and male gender.

Data for terminated members:

We calculated benefits for these members using the reported Average Salary and credited service. There were no members reported without Average Salary. If credited service was not reported (30 members), we used elapsed time from hire date to termination date (18 members), otherwise we assumed nine years of service. If termination date was not reported (12 members), we assumed the termination date was equal to the hire date plus credited service, otherwise the valuation date. If the reported termination date occurs prior to the reported hire date, the two dates were swapped.

There were no members reported without a date of birth. There were 6 members reported without a gender; male was assumed.

Data for retired members:

There were no members reported without a date of birth, gender or benefit.

Because PERA reclassifies disabled members as retirees once the member reaches Normal Retirement Age, we compare the members that PERA reports as retirees to our disabled group from the last valuation. If a member was disabled in the prior valuation, we reclassify that member as a disabled retiree in this year's valuation. We reclassified 71 retirees as disabled retirees in this valuation.

Changes in actuarial assumptions

The mortality projection scale was changed from MP-2018 to MP-2019.

Summary of Actuarial Assumptions (Continued)

Age in 2020	Percentage of Members Dying Each Year*					
	Healthy Post- Retirement Mortality		Healthy Pre- Retirement Mortality		Disability Mortality	
	Male	Female	Male	Female	Male	Female
20	0.04%	0.02%	0.05%	0.02%	0.04%	0.02%
25	0.07	0.04	0.06	0.02	0.07	0.04
30	0.11	0.08	0.06	0.03	0.11	0.08
35	0.17	0.14	0.08	0.04	0.17	0.14
40	0.24	0.20	0.08	0.05	0.24	0.20
45	0.30	0.23	0.11	0.07	0.30	0.23
50	0.40	0.28	0.17	0.11	0.40	0.28
55	0.56	0.39	0.29	0.18	0.56	0.39
60	0.80	0.60	0.50	0.28	0.80	0.60
65	1.14	0.87	0.89	0.40	1.14	0.87
70	1.67	1.31	1.44	0.64	1.67	1.31
75	2.65	2.14	2.39	1.10	2.65	2.14
80	4.49	3.68	4.06	1.94	4.49	3.68
85	7.88	6.60	8.00	5.16	7.88	6.60
90	13.87	11.78	14.62	11.36	13.87	11.78

* Generally, mortality rates are expected to increase as age increases. These standard mortality rates have been adjusted slightly to prevent decreasing mortality rates. The adjustment has no material effect on these results.

Age	Withdrawal Rates		Rates of Disability Retirement	
	Male	Female	Male	Female
20	14.70%	14.20%	0.04%	0.04%
25	14.70	14.20	0.06	0.06
30	9.10	11.40	0.10	0.08
35	6.00	8.60	0.18	0.11
40	4.40	6.90	0.23	0.18
45	3.40	4.30	0.34	0.39
50	2.40	3.10	0.55	0.70
55	1.40	2.20	0.88	1.18
60	0.10	0.20	1.41	2.41
65	0.00	0.00	1.67	2.67

Summary of Actuarial Assumptions (Concluded)

Age	Retirement Rate	Salary Scale	
		Age	Increase
50	3%	20	8.50%
51	2	25	7.25
52	2	30	6.25
53	2	35	5.75
54	5	40	5.25
55	20	45	4.50
56	8	50	4.50
57	8	55	4.25
58	8	60	3.75
59	8	65	3.50
60	15	70+	3.50
61	15		
62	30		
63	30		
64	30		
65	40		
66	40		
67	40		
68	40		
69	40		
70+	100		

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

Calculation of the Single Discount Rate

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the Fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the long-term expected rate of return is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal bond rate is required, as described in the following paragraph.

The *Single Discount Rate* (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this calculation, the expected rate of return on pension plan investments is 7.50%; the municipal bond rate is 2.45%; and **the resulting single discount rate is 7.50%**.

The tables in this section provide background for the development of the single discount rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities).

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the Single Discount Rate. It breaks down the benefit payments into present values for funded and unfunded portions and shows the equivalent total at the SDR.

Single Discount Rate Development Projection of Contributions (Dollars in Thousands)

Fiscal Year Ending	Payroll			Projected Contributions			
	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll Toward Current UAL*	Total Contributions
2020	\$ 217,702	\$ -	\$ 217,702				
2021	\$ 221,539	\$ 7,956	\$ 229,495	\$ 12,916	\$ 19,385	\$ 51	\$ 32,352
2022	\$ 208,972	\$ 27,982	\$ 236,954	\$ 12,183	\$ 18,285	\$ 179	\$ 30,647
2023	\$ 199,731	\$ 44,924	\$ 244,655	\$ 11,644	\$ 17,476	\$ 288	\$ 29,408
2024	\$ 192,220	\$ 60,386	\$ 252,606	\$ 11,206	\$ 16,819	\$ 386	\$ 28,411
2025	\$ 185,027	\$ 75,789	\$ 260,816	\$ 10,787	\$ 16,190	\$ 485	\$ 27,462
2026	\$ 178,168	\$ 91,124	\$ 269,292	\$ 10,387	\$ 15,590	\$ 583	\$ 26,560
2027	\$ 171,678	\$ 106,366	\$ 278,044	\$ 10,009	\$ 15,022	\$ 681	\$ 25,712
2028	\$ 165,451	\$ 121,630	\$ 287,081	\$ 9,646	\$ 14,477	\$ 778	\$ 24,901
2029	\$ 159,469	\$ 136,942	\$ 296,411	\$ 9,297	\$ 13,954	\$ 876	\$ 24,127
2030	\$ 153,605	\$ 152,439	\$ 306,044	\$ 8,955	\$ 13,440	\$ 976	\$ 23,371
2031	\$ 147,675	\$ 168,316	\$ 315,991	\$ 8,609	\$ 12,922	\$ 1,077	\$ 22,608
2032	\$ 141,752	\$ 184,509	\$ 326,261	\$ 8,264	\$ 12,403	\$ 1,181	\$ 21,848
2033	\$ 135,930	\$ 200,934	\$ 336,864	\$ 7,925	\$ 11,894	\$ 1,286	\$ 21,105
2034	\$ 130,199	\$ 217,613	\$ 347,812	\$ 7,591	\$ 11,392	\$ 1,393	\$ 20,376
2035	\$ 124,479	\$ 234,637	\$ 359,116	\$ 7,257	\$ 10,892	\$ 1,502	\$ 19,651
2036	\$ 118,779	\$ 252,008	\$ 370,787	\$ 6,925	\$ 10,393	\$ 1,613	\$ 18,931
2037	\$ 113,085	\$ 269,753	\$ 382,838	\$ 6,593	\$ 9,895	\$ 1,726	\$ 18,214
2038	\$ 107,401	\$ 287,879	\$ 395,280	\$ 6,261	\$ 9,398	\$ 1,842	\$ 17,501
2039	\$ 101,748	\$ 306,379	\$ 408,127	\$ 5,932	\$ 8,903	\$ 1,961	\$ 16,796
2040	\$ 96,092	\$ 325,299	\$ 421,391	\$ 5,602	\$ 8,408	\$ 2,082	\$ 16,092
2041	\$ 90,457	\$ 344,629	\$ 435,086	\$ 5,274	\$ 7,915	\$ 2,206	\$ 15,395
2042	\$ 84,846	\$ 364,380	\$ 449,226	\$ 4,947	\$ 7,424	\$ 2,332	\$ 14,703
2043	\$ 79,281	\$ 384,545	\$ 463,826	\$ 4,622	\$ 6,937	\$ 2,461	\$ 14,020
2044	\$ 73,607	\$ 405,293	\$ 478,900	\$ 4,291	\$ 6,441	\$ 2,594	\$ 13,326
2045	\$ 67,817	\$ 426,648	\$ 494,465	\$ 3,954	\$ 5,934	\$ 2,731	\$ 12,619
2046	\$ 62,022	\$ 448,513	\$ 510,535	\$ 3,616	\$ 5,427	\$ 2,870	\$ 11,913
2047	\$ 56,208	\$ 470,919	\$ 527,127	\$ 3,277	\$ 4,918	\$ 3,014	\$ 11,209
2048	\$ 50,508	\$ 493,751	\$ 544,259	\$ 2,945	\$ 4,419	\$ 3,160	\$ 10,524
2049	\$ 44,999	\$ 516,948	\$ 561,947	\$ 2,623	\$ 3,937	\$ 3,308	\$ 9,868
2050	\$ 39,602	\$ 540,609	\$ 580,211	\$ 2,309	\$ 3,465	\$ 3,460	\$ 9,234
2051	\$ 34,383	\$ 564,684	\$ 599,067	\$ 2,005	\$ 3,009	\$ 3,614	\$ 8,628
2052	\$ 29,436	\$ 589,101	\$ 618,537	\$ 1,716	\$ 2,576	\$ 3,770	\$ 8,062
2053	\$ 24,798	\$ 613,842	\$ 638,640	\$ 1,446	\$ 2,170	\$ 3,929	\$ 7,545
2054	\$ 20,528	\$ 638,867	\$ 659,395	\$ 1,197	\$ 1,796	\$ 4,089	\$ 7,082
2055	\$ 16,643	\$ 664,183	\$ 680,826	\$ 970	\$ 1,456	\$ 4,251	\$ 6,677
2056	\$ 13,206	\$ 689,747	\$ 702,953	\$ 770	\$ 1,155	\$ 4,414	\$ 6,339
2057	\$ 10,214	\$ 715,584	\$ 725,798	\$ 595	\$ 894	\$ 4,580	\$ 6,069
2058	\$ 7,656	\$ 741,731	\$ 749,387	\$ 446	\$ 670	\$ 4,747	\$ 5,863
2059	\$ 5,564	\$ 768,178	\$ 773,742	\$ 324	\$ 487	\$ 4,916	\$ 5,727
2060	\$ 3,896	\$ 794,993	\$ 798,889	\$ 227	\$ 341	\$ 5,088	\$ 5,656
2061	\$ 2,623	\$ 822,229	\$ 824,852	\$ 153	\$ 230	\$ 5,262	\$ 5,645
2062	\$ 1,699	\$ 849,961	\$ 851,660	\$ 99	\$ 149	\$ 5,440	\$ 5,688
2063	\$ 1,055	\$ 878,284	\$ 879,339	\$ 61	\$ 92	\$ 5,621	\$ 5,774
2064	\$ 632	\$ 907,286	\$ 907,918	\$ 37	\$ 55	\$ 5,807	\$ 5,899
2065	\$ 359	\$ 937,066	\$ 937,425	\$ 21	\$ 31	\$ 5,997	\$ 6,049
2066	\$ 191	\$ 967,700	\$ 967,891	\$ 11	\$ 17	\$ 6,193	\$ 6,221
2067	\$ 97	\$ 999,251	\$ 999,348	\$ 6	\$ 8	\$ 6,395	\$ 6,409
2068	\$ 44	\$ 1,031,783	\$ 1,031,827	\$ 3	\$ 4	\$ 6,603	\$ 6,610
2069	\$ 18	\$ 1,065,343	\$ 1,065,361	\$ 1	\$ 2	\$ 6,818	\$ 6,821
2070	\$ 6	\$ 1,099,979	\$ 1,099,985	\$ -	\$ -	\$ 7,040	\$ 7,040

*Equal to total contributions (14.58% of payroll for new employees) net of normal cost and expenses (13.94% of payroll).



Single Discount Rate Development

Projection of Contributions (Dollars in Thousands) (Concluded)

Fiscal Year Ending	Payroll			Projected Contributions			
	Payroll for Current Employees	Payroll for New Employees	Total Employee Payroll	Contributions from Current Employees	Employer Contributions for Current Employees	Contributions on Future Payroll Toward Current UAL*	Total Contributions
2071	\$ 1	\$ 1,135,734	\$ 1,135,735	\$ -	\$ -	\$ 7,269	\$ 7,269
2072	\$ -	\$ 1,172,646	\$ 1,172,646	\$ -	\$ -	\$ 7,505	\$ 7,505
2073	\$ -	\$ 1,210,757	\$ 1,210,757	\$ -	\$ -	\$ 7,749	\$ 7,749
2074	\$ -	\$ 1,250,107	\$ 1,250,107	\$ -	\$ -	\$ 8,001	\$ 8,001
2075	\$ -	\$ 1,290,735	\$ 1,290,735	\$ -	\$ -	\$ 8,261	\$ 8,261
2076	\$ -	\$ 1,332,684	\$ 1,332,684	\$ -	\$ -	\$ 8,529	\$ 8,529
2077	\$ -	\$ 1,375,996	\$ 1,375,996	\$ -	\$ -	\$ 8,806	\$ 8,806
2078	\$ -	\$ 1,420,716	\$ 1,420,716	\$ -	\$ -	\$ 9,093	\$ 9,093
2079	\$ -	\$ 1,466,889	\$ 1,466,889	\$ -	\$ -	\$ 9,388	\$ 9,388
2080	\$ -	\$ 1,514,563	\$ 1,514,563	\$ -	\$ -	\$ 9,693	\$ 9,693
2081	\$ -	\$ 1,563,787	\$ 1,563,787	\$ -	\$ -	\$ 10,008	\$ 10,008
2082	\$ -	\$ 1,614,610	\$ 1,614,610	\$ -	\$ -	\$ 10,334	\$ 10,334
2083	\$ -	\$ 1,667,084	\$ 1,667,084	\$ -	\$ -	\$ 10,669	\$ 10,669
2084	\$ -	\$ 1,721,265	\$ 1,721,265	\$ -	\$ -	\$ 11,016	\$ 11,016
2085	\$ -	\$ 1,777,206	\$ 1,777,206	\$ -	\$ -	\$ 11,374	\$ 11,374
2086	\$ -	\$ 1,834,965	\$ 1,834,965	\$ -	\$ -	\$ 11,744	\$ 11,744
2087	\$ -	\$ 1,894,601	\$ 1,894,601	\$ -	\$ -	\$ 12,125	\$ 12,125
2088	\$ -	\$ 1,956,176	\$ 1,956,176	\$ -	\$ -	\$ 12,520	\$ 12,520
2089	\$ -	\$ 2,019,752	\$ 2,019,752	\$ -	\$ -	\$ 12,926	\$ 12,926
2090	\$ -	\$ 2,085,394	\$ 2,085,394	\$ -	\$ -	\$ 13,347	\$ 13,347
2091	\$ -	\$ 2,153,169	\$ 2,153,169	\$ -	\$ -	\$ 13,780	\$ 13,780
2092	\$ -	\$ 2,223,147	\$ 2,223,147	\$ -	\$ -	\$ 14,228	\$ 14,228
2093	\$ -	\$ 2,295,399	\$ 2,295,399	\$ -	\$ -	\$ 14,691	\$ 14,691
2094	\$ -	\$ 2,370,000	\$ 2,370,000	\$ -	\$ -	\$ 15,168	\$ 15,168
2095	\$ -	\$ 2,447,025	\$ 2,447,025	\$ -	\$ -	\$ 15,661	\$ 15,661
2096	\$ -	\$ 2,526,553	\$ 2,526,553	\$ -	\$ -	\$ 16,170	\$ 16,170
2097	\$ -	\$ 2,608,666	\$ 2,608,666	\$ -	\$ -	\$ 16,695	\$ 16,695
2098	\$ -	\$ 2,693,448	\$ 2,693,448	\$ -	\$ -	\$ 17,238	\$ 17,238
2099	\$ -	\$ 2,780,985	\$ 2,780,985	\$ -	\$ -	\$ 17,798	\$ 17,798
2100	\$ -	\$ 2,871,367	\$ 2,871,367	\$ -	\$ -	\$ 18,377	\$ 18,377
2101	\$ -	\$ 2,964,686	\$ 2,964,686	\$ -	\$ -	\$ 18,974	\$ 18,974
2102	\$ -	\$ 3,061,038	\$ 3,061,038	\$ -	\$ -	\$ 19,591	\$ 19,591
2103	\$ -	\$ 3,160,522	\$ 3,160,522	\$ -	\$ -	\$ 20,227	\$ 20,227
2104	\$ -	\$ 3,263,239	\$ 3,263,239	\$ -	\$ -	\$ 20,885	\$ 20,885
2105	\$ -	\$ 3,369,294	\$ 3,369,294	\$ -	\$ -	\$ 21,563	\$ 21,563
2106	\$ -	\$ 3,478,796	\$ 3,478,796	\$ -	\$ -	\$ 22,264	\$ 22,264
2107	\$ -	\$ 3,591,857	\$ 3,591,857	\$ -	\$ -	\$ 22,988	\$ 22,988
2108	\$ -	\$ 3,708,593	\$ 3,708,593	\$ -	\$ -	\$ 23,735	\$ 23,735
2109	\$ -	\$ 3,829,122	\$ 3,829,122	\$ -	\$ -	\$ 24,506	\$ 24,506
2110	\$ -	\$ 3,953,568	\$ 3,953,568	\$ -	\$ -	\$ 25,303	\$ 25,303
2111	\$ -	\$ 4,082,059	\$ 4,082,059	\$ -	\$ -	\$ 26,125	\$ 26,125
2112	\$ -	\$ 4,214,726	\$ 4,214,726	\$ -	\$ -	\$ 26,974	\$ 26,974
2113	\$ -	\$ 4,351,705	\$ 4,351,705	\$ -	\$ -	\$ 27,851	\$ 27,851
2114	\$ -	\$ 4,493,135	\$ 4,493,135	\$ -	\$ -	\$ 28,756	\$ 28,756
2115	\$ -	\$ 4,639,162	\$ 4,639,162	\$ -	\$ -	\$ 29,691	\$ 29,691
2116	\$ -	\$ 4,789,935	\$ 4,789,935	\$ -	\$ -	\$ 30,656	\$ 30,656
2117	\$ -	\$ 4,945,608	\$ 4,945,608	\$ -	\$ -	\$ 31,652	\$ 31,652
2118	\$ -	\$ 5,106,340	\$ 5,106,340	\$ -	\$ -	\$ 32,681	\$ 32,681
2119	\$ -	\$ 5,272,296	\$ 5,272,296	\$ -	\$ -	\$ 33,743	\$ 33,743
2120	\$ -	\$ 5,443,646	\$ 5,443,646	\$ -	\$ -	\$ 34,839	\$ 34,839

*Equal to total contributions (14.58% of payroll for new employees) net of normal cost and expenses (13.94% of payroll).



Single Discount Rate Development

Projection of Plan Fiduciary Net Position (Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.50%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2021	\$ 787,322	\$ 32,352	\$ 24,347	\$ 310	\$ 59,332	\$ 854,349
2022	\$ 854,349	\$ 30,647	\$ 27,236	\$ 293	\$ 64,191	\$ 921,658
2023	\$ 921,658	\$ 29,408	\$ 30,160	\$ 280	\$ 69,086	\$ 989,712
2024	\$ 989,712	\$ 28,411	\$ 33,119	\$ 269	\$ 74,045	\$ 1,058,780
2025	\$ 1,058,780	\$ 27,462	\$ 36,651	\$ 259	\$ 79,061	\$ 1,128,393
2026	\$ 1,128,393	\$ 26,560	\$ 40,980	\$ 249	\$ 84,090	\$ 1,197,814
2027	\$ 1,197,814	\$ 25,712	\$ 45,172	\$ 240	\$ 89,111	\$ 1,267,225
2028	\$ 1,267,225	\$ 24,901	\$ 49,550	\$ 232	\$ 94,126	\$ 1,336,470
2029	\$ 1,336,470	\$ 24,127	\$ 54,286	\$ 223	\$ 99,117	\$ 1,405,205
2030	\$ 1,405,205	\$ 23,371	\$ 59,081	\$ 215	\$ 104,068	\$ 1,473,348
2031	\$ 1,473,348	\$ 22,608	\$ 64,171	\$ 207	\$ 108,963	\$ 1,540,541
2032	\$ 1,540,541	\$ 21,848	\$ 69,353	\$ 198	\$ 113,784	\$ 1,606,622
2033	\$ 1,606,622	\$ 21,105	\$ 75,114	\$ 190	\$ 118,501	\$ 1,670,924
2034	\$ 1,670,924	\$ 20,376	\$ 80,899	\$ 182	\$ 123,084	\$ 1,733,303
2035	\$ 1,733,303	\$ 19,651	\$ 86,584	\$ 174	\$ 127,527	\$ 1,793,723
2036	\$ 1,793,723	\$ 18,931	\$ 92,526	\$ 166	\$ 131,813	\$ 1,851,775
2037	\$ 1,851,775	\$ 18,214	\$ 98,692	\$ 158	\$ 135,914	\$ 1,907,053
2038	\$ 1,907,053	\$ 17,501	\$ 104,831	\$ 150	\$ 139,808	\$ 1,959,381
2039	\$ 1,959,381	\$ 16,796	\$ 111,050	\$ 142	\$ 143,478	\$ 2,008,463
2040	\$ 2,008,463	\$ 16,092	\$ 117,147	\$ 135	\$ 146,908	\$ 2,054,181
2041	\$ 2,054,181	\$ 15,395	\$ 123,273	\$ 127	\$ 150,086	\$ 2,096,262
2042	\$ 2,096,262	\$ 14,703	\$ 129,164	\$ 119	\$ 153,000	\$ 2,134,682
2043	\$ 2,134,682	\$ 14,020	\$ 134,834	\$ 111	\$ 155,648	\$ 2,169,405
2044	\$ 2,169,405	\$ 13,326	\$ 140,572	\$ 103	\$ 158,016	\$ 2,200,072
2045	\$ 2,200,072	\$ 12,619	\$ 146,430	\$ 95	\$ 160,074	\$ 2,226,240
2046	\$ 2,226,240	\$ 11,913	\$ 152,210	\$ 87	\$ 161,799	\$ 2,247,655
2047	\$ 2,247,655	\$ 11,209	\$ 158,019	\$ 79	\$ 163,165	\$ 2,263,931
2048	\$ 2,263,931	\$ 10,524	\$ 163,503	\$ 71	\$ 164,159	\$ 2,275,040
2049	\$ 2,275,040	\$ 9,868	\$ 168,544	\$ 63	\$ 164,783	\$ 2,281,084
2050	\$ 2,281,084	\$ 9,234	\$ 173,379	\$ 55	\$ 165,035	\$ 2,281,919
2051	\$ 2,281,919	\$ 8,628	\$ 177,823	\$ 48	\$ 164,912	\$ 2,277,588
2052	\$ 2,277,588	\$ 8,062	\$ 181,648	\$ 41	\$ 164,426	\$ 2,268,387
2053	\$ 2,268,387	\$ 7,545	\$ 184,903	\$ 35	\$ 163,597	\$ 2,254,591
2054	\$ 2,254,591	\$ 7,082	\$ 187,498	\$ 29	\$ 162,450	\$ 2,236,596
2055	\$ 2,236,596	\$ 6,677	\$ 189,457	\$ 23	\$ 161,013	\$ 2,214,806
2056	\$ 2,214,806	\$ 6,339	\$ 190,742	\$ 18	\$ 159,319	\$ 2,189,704
2057	\$ 2,189,704	\$ 6,069	\$ 191,369	\$ 14	\$ 157,404	\$ 2,161,794
2058	\$ 2,161,794	\$ 5,863	\$ 191,406	\$ 11	\$ 155,302	\$ 2,131,542
2059	\$ 2,131,542	\$ 5,727	\$ 190,859	\$ 8	\$ 153,048	\$ 2,099,450
2060	\$ 2,099,450	\$ 5,656	\$ 189,746	\$ 5	\$ 150,680	\$ 2,066,035
2061	\$ 2,066,035	\$ 5,645	\$ 188,077	\$ 4	\$ 148,235	\$ 2,031,834
2062	\$ 2,031,834	\$ 5,688	\$ 185,881	\$ 2	\$ 145,752	\$ 1,997,391
2063	\$ 1,997,391	\$ 5,774	\$ 183,201	\$ 1	\$ 143,271	\$ 1,963,234
2064	\$ 1,963,234	\$ 5,899	\$ 180,080	\$ 1	\$ 140,828	\$ 1,929,880
2065	\$ 1,929,880	\$ 6,049	\$ 176,572	\$ 1	\$ 138,462	\$ 1,897,818
2066	\$ 1,897,818	\$ 6,221	\$ 172,714	\$ -	\$ 136,205	\$ 1,867,530
2067	\$ 1,867,530	\$ 6,409	\$ 168,538	\$ -	\$ 134,094	\$ 1,839,495
2068	\$ 1,839,495	\$ 6,610	\$ 164,076	\$ -	\$ 132,163	\$ 1,814,192
2069	\$ 1,814,192	\$ 6,821	\$ 159,351	\$ -	\$ 130,448	\$ 1,792,110
2070	\$ 1,792,110	\$ 7,040	\$ 154,384	\$ -	\$ 128,982	\$ 1,773,748

For purposes of this projection, we assumed the current fixed rate contribution would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.



Single Discount Rate Development

Projection of Plan Fiduciary Net Position (Dollars in Thousands)

(Concluded)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected Administrative Expenses	Projected Investment Earnings at 7.50%	Projected Ending Plan Net Position
	(a)	(b)	(c)	(d)	(e)	(f)=(a)+(b)-(c)-(d)+(e)
2071	\$ 1,773,748	\$ 7,269	\$ 149,196	\$ -	\$ 127,805	\$ 1,759,626
2072	\$ 1,759,626	\$ 7,505	\$ 143,805	\$ -	\$ 126,953	\$ 1,750,279
2073	\$ 1,750,279	\$ 7,749	\$ 138,229	\$ -	\$ 126,466	\$ 1,746,265
2074	\$ 1,746,265	\$ 8,001	\$ 132,487	\$ -	\$ 126,386	\$ 1,748,165
2075	\$ 1,748,165	\$ 8,261	\$ 126,599	\$ -	\$ 126,754	\$ 1,756,581
2076	\$ 1,756,581	\$ 8,529	\$ 120,584	\$ -	\$ 127,617	\$ 1,772,143
2077	\$ 1,772,143	\$ 8,806	\$ 114,466	\$ -	\$ 129,020	\$ 1,795,503
2078	\$ 1,795,503	\$ 9,093	\$ 108,265	\$ -	\$ 131,010	\$ 1,827,341
2079	\$ 1,827,341	\$ 9,388	\$ 102,004	\$ -	\$ 133,640	\$ 1,868,365
2080	\$ 1,868,365	\$ 9,693	\$ 95,709	\$ -	\$ 136,960	\$ 1,919,309
2081	\$ 1,919,309	\$ 10,008	\$ 89,406	\$ -	\$ 141,024	\$ 1,980,935
2082	\$ 1,980,935	\$ 10,334	\$ 83,121	\$ -	\$ 145,889	\$ 2,054,037
2083	\$ 2,054,037	\$ 10,669	\$ 76,884	\$ -	\$ 151,614	\$ 2,139,436
2084	\$ 2,139,436	\$ 11,016	\$ 70,727	\$ -	\$ 158,259	\$ 2,237,984
2085	\$ 2,237,984	\$ 11,374	\$ 64,684	\$ -	\$ 165,885	\$ 2,350,559
2086	\$ 2,350,559	\$ 11,744	\$ 58,788	\$ -	\$ 174,559	\$ 2,478,074
2087	\$ 2,478,074	\$ 12,125	\$ 53,072	\$ -	\$ 184,347	\$ 2,621,474
2088	\$ 2,621,474	\$ 12,520	\$ 47,569	\$ -	\$ 195,320	\$ 2,781,745
2089	\$ 2,781,745	\$ 12,926	\$ 42,308	\$ -	\$ 207,549	\$ 2,959,912
2090	\$ 2,959,912	\$ 13,347	\$ 37,317	\$ -	\$ 221,110	\$ 3,157,052
2091	\$ 3,157,052	\$ 13,780	\$ 32,623	\$ -	\$ 236,085	\$ 3,374,294
2092	\$ 3,374,294	\$ 14,228	\$ 28,247	\$ -	\$ 252,555	\$ 3,612,830
2093	\$ 3,612,830	\$ 14,691	\$ 24,206	\$ -	\$ 270,611	\$ 3,873,926
2094	\$ 3,873,926	\$ 15,168	\$ 20,514	\$ -	\$ 290,347	\$ 4,158,927
2095	\$ 4,158,927	\$ 15,661	\$ 17,178	\$ -	\$ 311,863	\$ 4,469,273
2096	\$ 4,469,273	\$ 16,170	\$ 14,201	\$ -	\$ 335,268	\$ 4,806,510
2097	\$ 4,806,510	\$ 16,695	\$ 11,580	\$ -	\$ 360,676	\$ 5,172,301
2098	\$ 5,172,301	\$ 17,238	\$ 9,307	\$ -	\$ 388,214	\$ 5,568,446
2099	\$ 5,568,446	\$ 17,798	\$ 7,365	\$ -	\$ 418,017	\$ 5,996,896
2100	\$ 5,996,896	\$ 18,377	\$ 5,733	\$ -	\$ 450,232	\$ 6,459,772
2101	\$ 6,459,772	\$ 18,974	\$ 4,388	\$ -	\$ 485,020	\$ 6,959,378
2102	\$ 6,959,378	\$ 19,591	\$ 3,298	\$ -	\$ 522,553	\$ 7,498,224
2103	\$ 7,498,224	\$ 20,227	\$ 2,432	\$ -	\$ 563,022	\$ 8,079,041
2104	\$ 8,079,041	\$ 20,885	\$ 1,760	\$ -	\$ 606,632	\$ 8,704,798
2105	\$ 8,704,798	\$ 21,563	\$ 1,248	\$ -	\$ 653,607	\$ 9,378,720
2106	\$ 9,378,720	\$ 22,264	\$ 867	\$ -	\$ 704,192	\$ 10,104,309
2107	\$ 10,104,309	\$ 22,988	\$ 590	\$ -	\$ 758,648	\$ 10,885,355
2108	\$ 10,885,355	\$ 23,735	\$ 393	\$ -	\$ 817,261	\$ 11,725,958
2109	\$ 11,725,958	\$ 24,506	\$ 257	\$ -	\$ 880,339	\$ 12,630,546
2110	\$ 12,630,546	\$ 25,303	\$ 165	\$ -	\$ 948,216	\$ 13,603,900
2111	\$ 13,603,900	\$ 26,125	\$ 105	\$ -	\$ 1,021,250	\$ 14,651,170
2112	\$ 14,651,170	\$ 26,974	\$ 65	\$ -	\$ 1,099,828	\$ 15,777,907
2113	\$ 15,777,907	\$ 27,851	\$ 41	\$ -	\$ 1,184,367	\$ 16,990,084
2114	\$ 16,990,084	\$ 28,756	\$ 25	\$ -	\$ 1,275,314	\$ 18,294,129
2115	\$ 18,294,129	\$ 29,691	\$ 16	\$ -	\$ 1,373,152	\$ 19,696,956
2116	\$ 19,696,956	\$ 30,656	\$ 10	\$ -	\$ 1,478,400	\$ 21,206,002
2117	\$ 21,206,002	\$ 31,652	\$ 6	\$ -	\$ 1,591,615	\$ 22,829,263
2118	\$ 22,829,263	\$ 32,681	\$ 4	\$ -	\$ 1,713,398	\$ 24,575,338
2119	\$ 24,575,338	\$ 33,743	\$ 2	\$ -	\$ 1,844,392	\$ 26,453,471
2120	\$ 26,453,471	\$ 34,839	\$ 2	\$ -	\$ 1,985,293	\$ 28,473,601

For purposes of this projection, we assumed the current fixed rate contribution would continue after the plan becomes fully funded. If we reflected a decrease in contribution rates due to full funding, future assets and contributions would be less than what is shown herein.



Single Discount Rate Development

Present Values of Projected Benefits (Dollars in Thousands)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v ^{(a)-.5}	(g)=(e)*vf ^{(a)-.5}	(h)=(c)/(1+sdr) ^{(a)-.5}
2021	\$ 787,322	\$ 24,347	\$ 24,347	\$ 0	\$ 23,482	\$ 0	\$ 23,482
2022	854,349	27,236	27,236	0	24,436	0	24,436
2023	921,658	30,160	30,160	0	25,171	0	25,171
2024	989,714	33,119	33,119	0	25,712	0	25,712
2025	1,058,784	36,651	36,651	0	26,470	0	26,470
2026	1,128,396	40,980	40,980	0	27,531	0	27,531
2027	1,197,817	45,172	45,172	0	28,230	0	28,230
2028	1,267,227	49,550	49,550	0	28,806	0	28,806
2029	1,336,472	54,286	54,286	0	29,357	0	29,357
2030	1,405,207	59,081	59,081	0	29,721	0	29,721
2031	1,473,349	64,171	64,171	0	30,029	0	30,029
2032	1,540,543	69,353	69,353	0	30,190	0	30,190
2033	1,606,624	75,114	75,114	0	30,417	0	30,417
2034	1,670,925	80,899	80,899	0	30,474	0	30,474
2035	1,733,303	86,584	86,584	0	30,340	0	30,340
2036	1,793,722	92,526	92,526	0	30,160	0	30,160
2037	1,851,774	98,692	98,692	0	29,926	0	29,926
2038	1,907,051	104,831	104,831	0	29,569	0	29,569
2039	1,959,379	111,050	111,050	0	29,138	0	29,138
2040	2,008,459	117,147	117,147	0	28,594	0	28,594
2041	2,054,178	123,273	123,273	0	27,989	0	27,989
2042	2,096,259	129,164	129,164	0	27,281	0	27,281
2043	2,134,679	134,834	134,834	0	26,492	0	26,492
2044	2,169,403	140,572	140,572	0	25,692	0	25,692
2045	2,200,069	146,430	146,430	0	24,896	0	24,896
2046	2,226,237	152,210	152,210	0	24,073	0	24,073
2047	2,247,652	158,019	158,019	0	23,248	0	23,248
2048	2,263,929	163,503	163,503	0	22,377	0	22,377
2049	2,275,038	168,544	168,544	0	21,457	0	21,457
2050	2,281,083	173,379	173,379	0	20,533	0	20,533
2051	2,281,917	177,823	177,823	0	19,590	0	19,590
2052	2,277,585	181,648	181,648	0	18,615	0	18,615
2053	2,268,383	184,903	184,903	0	17,627	0	17,627
2054	2,254,587	187,498	187,498	0	16,627	0	16,627
2055	2,236,591	189,457	189,457	0	15,629	0	15,629
2056	2,214,801	190,742	190,742	0	14,637	0	14,637
2057	2,189,699	191,369	191,369	0	13,660	0	13,660
2058	2,161,789	191,406	191,406	0	12,710	0	12,710
2059	2,131,537	190,859	190,859	0	11,789	0	11,789
2060	2,099,446	189,746	189,746	0	10,903	0	10,903
2061	2,066,031	188,077	188,077	0	10,053	0	10,053
2062	2,031,830	185,881	185,881	0	9,242	0	9,242
2063	1,997,385	183,201	183,201	0	8,474	0	8,474
2064	1,963,228	180,080	180,080	0	7,748	0	7,748
2065	1,929,874	176,572	176,572	0	7,067	0	7,067
2066	1,897,813	172,714	172,714	0	6,430	0	6,430
2067	1,867,524	168,538	168,538	0	5,837	0	5,837
2068	1,839,489	164,076	164,076	0	5,286	0	5,286
2069	1,814,187	159,351	159,351	0	4,776	0	4,776
2070	1,792,104	154,384	154,384	0	4,304	0	4,304



Single Discount Rate Development

Present Values of Projected Benefits (Dollars in Thousands)

(Concluded)

Fiscal Year Ending	Projected Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v ^{(a)-.5}	(g)=(e)*vf ^{(a)-.5}	(h)=(c)/(1+sdr) ^{(a)-.5}
2071	\$ 1,773,742	\$ 149,196	\$ 149,196	\$ 0	\$ 3,869	\$ 0	\$ 3,869
2072	1,759,619	143,805	143,805	0	3,469	0	3,469
2073	1,750,272	138,229	138,229	0	3,102	0	3,102
2074	1,746,258	132,487	132,487	0	2,766	0	2,766
2075	1,748,157	126,599	126,599	0	2,458	0	2,458
2076	1,756,574	120,584	120,584	0	2,178	0	2,178
2077	1,772,136	114,466	114,466	0	1,924	0	1,924
2078	1,795,496	108,265	108,265	0	1,692	0	1,692
2079	1,827,335	102,004	102,004	0	1,483	0	1,483
2080	1,868,358	95,709	95,709	0	1,295	0	1,295
2081	1,919,301	89,406	89,406	0	1,125	0	1,125
2082	1,980,928	83,121	83,121	0	973	0	973
2083	2,054,030	76,884	76,884	0	837	0	837
2084	2,139,430	70,727	70,727	0	716	0	716
2085	2,237,978	64,684	64,684	0	609	0	609
2086	2,350,553	58,788	58,788	0	515	0	515
2087	2,478,068	53,072	53,072	0	433	0	433
2088	2,621,468	47,569	47,569	0	361	0	361
2089	2,781,739	42,308	42,308	0	298	0	298
2090	2,959,906	37,317	37,317	0	245	0	245
2091	3,157,046	32,623	32,623	0	199	0	199
2092	3,374,287	28,247	28,247	0	160	0	160
2093	3,612,823	24,206	24,206	0	128	0	128
2094	3,873,919	20,514	20,514	0	101	0	101
2095	4,158,920	17,178	17,178	0	79	0	79
2096	4,469,267	14,201	14,201	0	60	0	60
2097	4,806,503	11,580	11,580	0	46	0	46
2098	5,172,294	9,307	9,307	0	34	0	34
2099	5,568,440	7,365	7,365	0	25	0	25
2100	5,996,891	5,733	5,733	0	18	0	18
2101	6,459,766	4,388	4,388	0	13	0	13
2102	6,959,372	3,298	3,298	0	9	0	9
2103	7,498,218	2,432	2,432	0	6	0	6
2104	8,079,035	1,760	1,760	0	4	0	4
2105	8,704,792	1,248	1,248	0	3	0	3
2106	9,378,715	867	867	0	2	0	2
2107	10,104,304	590	590	0	1	0	1
2108	10,885,350	393	393	0	1	0	1
2109	11,725,952	257	257	0	0	0	0
2110	12,630,540	165	165	0	0	0	0
2111	13,603,894	105	105	0	0	0	0
2112	14,651,165	65	65	0	0	0	0
2113	15,777,902	41	41	0	0	0	0
2114	16,990,079	25	25	0	0	0	0
2115	18,294,124	16	16	0	0	0	0
2116	19,696,951	10	10	0	0	0	0
2117	21,205,997	6	6	0	0	0	0
2118	22,829,257	4	4	0	0	0	0
2119	24,575,332	2	2	0	0	0	0
2120	26,453,464	2	2	0	0	0	0
Totals					\$ 1,064,039	\$ 0	\$ 1,064,039



SECTION H

GLOSSARY OF TERMS

Glossary of Terms

<i>Actuarial Accrued Liability (AAL)</i>	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as “accrued liability” or “actuarial liability.”
<i>Actuarial Assumptions</i>	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
<i>Accrued Service</i>	Service credited under the system which was rendered before the date of the actuarial valuation.
<i>Actuarial Equivalent</i>	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
<i>Actuarial Cost Method</i>	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
<i>Actuarial Gain (Loss)</i>	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
<i>Actuarial Present Value (APV)</i>	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future benefit payments at predetermined rates of interest to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
<i>Actuarial Valuation</i>	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
<i>Actuarial Valuation Date</i>	The date as of which an actuarial valuation is performed.
<i>Actuarially Determined Contribution (ADC)</i>	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically, the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

Glossary of Terms

<i>Amortization Payment</i>	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
<i>Amortization Method</i>	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be “open” (meaning, reset each year) or “closed” (the number of years remaining will decline each year).
<i>Cost-of-Living Adjustments</i>	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
<i>Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)</i>	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
<i>Covered-Employee Payroll</i>	The payroll of covered employees, which is typically only the pensionable pay (meets the statutory salary definition) and does not include pay above any pay cap.
<i>Deferred Inflows and Outflows of Resources</i>	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
<i>Discount Rate or Single Discount Rate</i>	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically: <ol style="list-style-type: none">1. The benefit payments to be made while the pension plans’ fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.
<i>Entry Age Actuarial Cost Method or Entry Age Normal (EAN)</i>	The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit age(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

Glossary of Terms

<i>GASB</i>	The Governmental Accounting Standards Board is an organization that exists with authority to promulgate accounting standards for state and local governmental entities.
<i>Fiduciary Net Position</i>	The fiduciary net position is the value of the assets of the trust.
<i>Long-Term Expected Rate of Return</i>	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
<i>Money-Weighted Rate of Return</i>	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
<i>Multiple-Employer Defined Benefit Pension Plan</i>	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
<i>Municipal Bond Rate</i>	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
<i>Net Pension Liability (NPL)</i>	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.
<i>Non-Employer Contribution Entities</i>	Non-employer contribution entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting Statements No. 67 and No. 68 plan members are not considered non-employer contribution entities.
<i>Normal Cost</i>	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method.
<i>Other Postemployment Benefits (OPEB)</i>	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits regardless of the manner in which they are provided. Other postemployment benefits do not include termination benefits.
<i>Real Rate of Return</i>	The real rate of return is the rate of return on an investment after adjustment to eliminate inflation.
<i>Service Cost</i>	The service cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.

Glossary of Terms

Total Pension Expense

The total pension expense is the sum of the following items that are recognized at the end of the employer's fiscal year:

1. Service Cost
2. Interest on the Total Pension Liability
3. Current-Period Changes in Benefit Terms
4. Employee Contributions
5. Projected Earnings on Plan Investments
6. Pension Plan Administrative Expense
7. Other Changes in Plan Fiduciary Net Position
8. Recognition of Outflow (Inflow) of Resources due to the difference between expected and actual measurement of the Total Pension Liability
9. Recognition of Outflow (Inflow) of Resources due to Assumption Changes
10. Recognition of Outflow (Inflow) of Resources due to the difference between projected and actual earnings in pension plan investments

Total Pension Liability (TPL)

The TPL is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.

Unfunded Actuarial Accrued Liability (UAAL)

The UAAL is the difference between actuarial accrued liability and valuation assets.

Valuation Assets

The valuation assets are the plan fiduciary net position used in determining the net pension liability of the plan. For purposes of the GASB Statement No. 67, the asset valuation method is equal to the market value of assets.